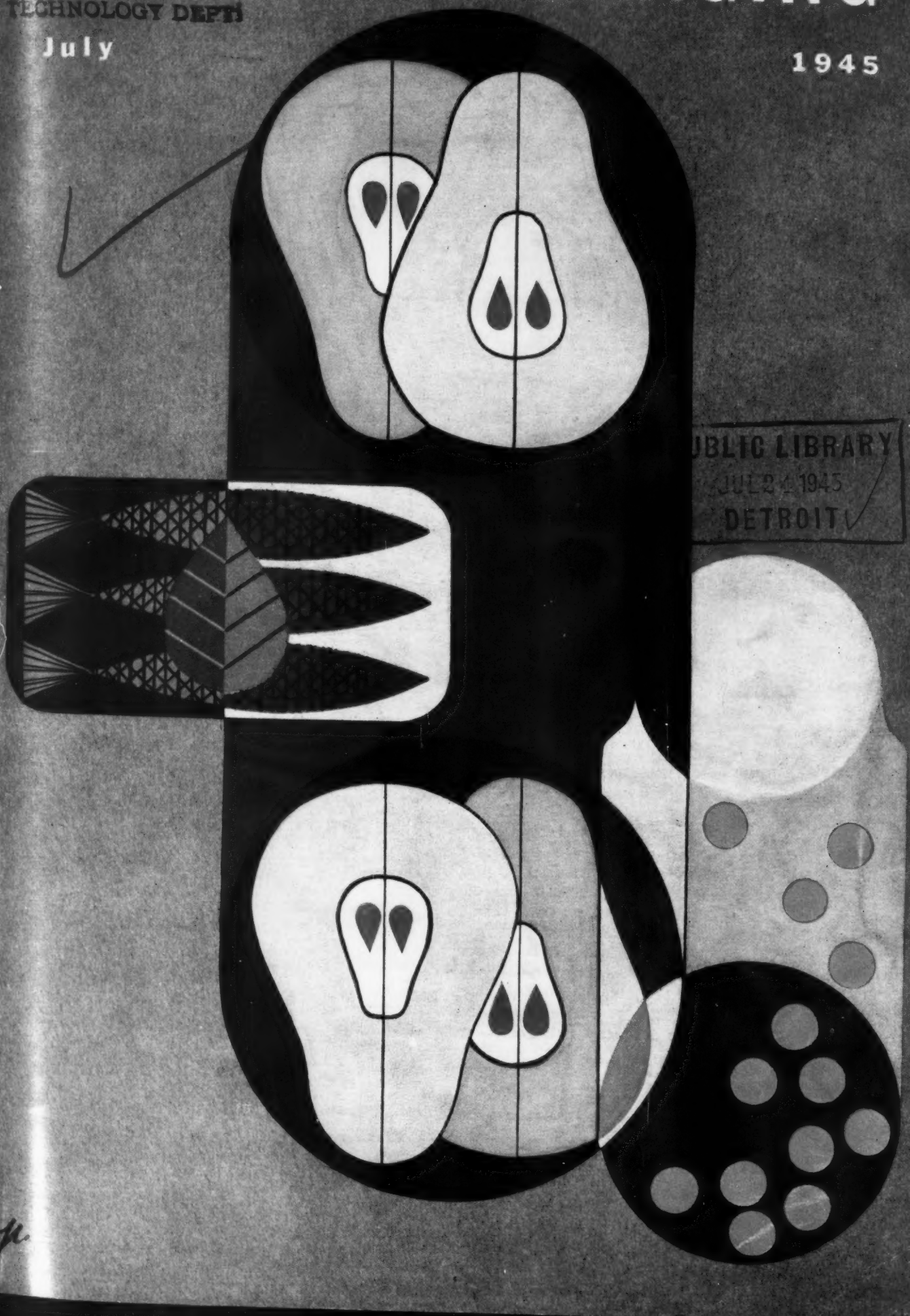
MODERN PACKAGING

TECHNOLOGY DEPT

July 1945



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Resist THE ELEMENTS

Rely on National . . . with its long practiced, specialized skill . . . to provide a bond of high wet strength

With the thought in mind that you can't choose the weather — but you can choose the adhesive — let's take a look at the short but very complex life of an ordinary single-ply Kraft shopping bag: A sudden shower may drench it; an unexpected meeting with a wet surface may soak it; close contact with wet vegetables, frozen food and sweating bottles may saturate it. In each case the bond will fail almost immediately unless it is formed with a high wet strength adhesive.

Make a comparative submersion test against an ordinary bond. There's a sales point here that may surprise you!

Now, let's look at the more complex problem of shipping calcium chloride. Packaged at 205°F. it is so hygroscopic that moisture cakes it . . . so deliquescent that excessive moisture sends it into solution . . . yet it must be delivered dry and free flowing. A 5-ply multiwall bag solved the problem: Three plies of specification Kraft paper; two special moisture-resistant plies — all bonded with high wet strength adhesives.

Wet strength adhesives offer a solution to packaging, converting, assembling problems involving resistance to water, moisture-vapor, oil, steam, grease, lactic acid, etc. Submit your specific problem to National . . . now!

Offices: 270 Madison Avenue, New York 16; 3641 So Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto and Montreal. In England: National Adhesives Ltd., Slough, Bucks.

National ADHESIVES

EVERY TYPE OF ADHESIVE FOR *EVERY TYPE OF ADHESION*

TECHNOLOGY DEPT.

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MODERN PACKAGING

VOLUME 18 JULY 1945 NUMBER 11

★ ★ ★

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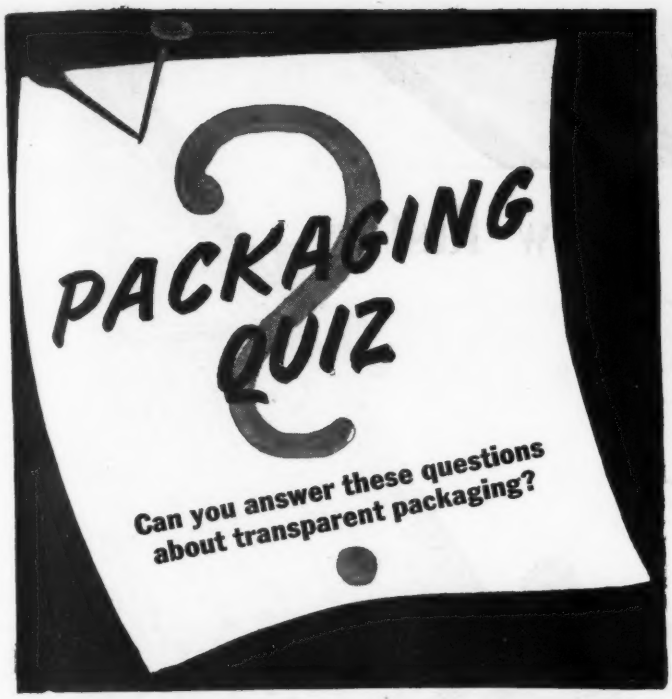
COVER—This month's cover is a seasonal story of canning in pure design and color. In it you will find several container forms—a flat tin for fish, a cylindrical can for pears and a glass jar for peas. This is the seventh cover in this year's series by Peter Piening.

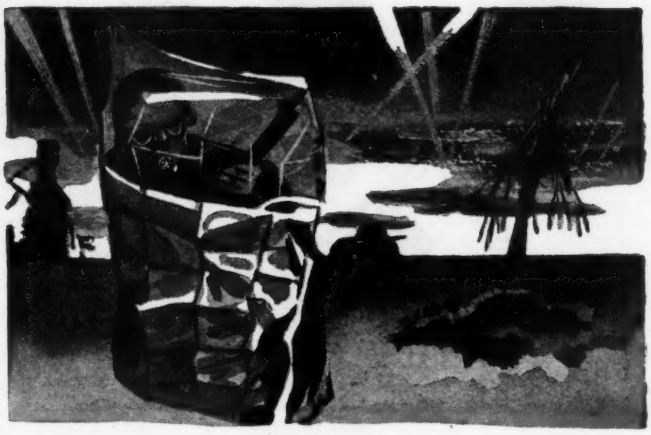


Q. Do you know the war job this handy roll of pressure-sensitive Cellophane tape does on fighting equipment like the tank shown above?

A. The tape seals the gun ports and other apertures in tanks and the muzzles of machine guns while en route to the front. It protects against rust and corrosion from sea spray and fog . . . keeps out dirt and foreign material so that the weapons are ready for use.

Q. What is the function of Cellophane on milk bottle tops?

A. Its principal function is to protect the pouring lip of the milk bottle from germs, dust, and dirt after it leaves the dairy. A special type of film has been developed for these caps—water-resistant, non-fogging and durable—needed because milk bottles are often packed in cracked ice during delivery.



Q. This Cellophane coverall guards the body against poison-gas attacks. How many loaves of bread could be packaged with the Cellophane required to furnish this protection to one man . . . ( ) 55 ( ) 85 ( ) 105?

A. 105 loaves. And these garments are issued not only to every fighting man, but to all nurses, doctors and other personnel in combat areas. Think of the enormous amount of Cellophane required for this single item . . . and you will understand why the civilian supply is now limited.

From three basic classifications—Cellophane, cellulose acetate film, and polyvinyl alcohol film—Du Pont has developed 56 different types of transparent films, chemically tailored to meet different needs. Du Pont will help you select the one best suited to your requirements. Military requirements now greatly limit our converters and ourselves in supplying civilian needs Investigate now, so you can take full advantage of transparent packaging after the war. E. I. du Pont de Nemours & Co. (Inc.), Cellophane Division, Wilmington 98, Delaware.

BUY BONDS REGULARLY!

DU PONT

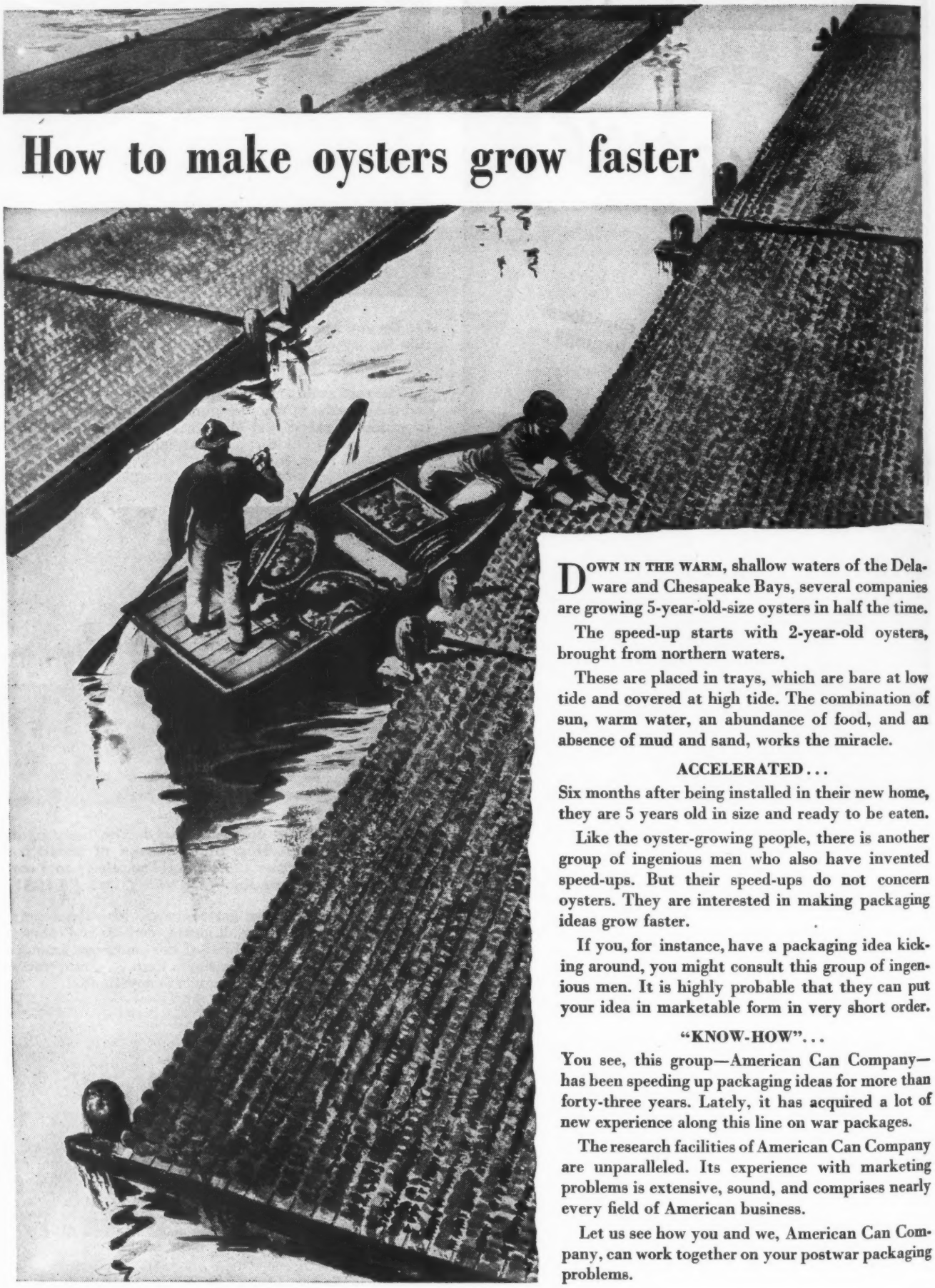
REG. U.S. PAT. OFF.

Cellophane

Shows what it Protects—at Low Cost

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

How to make oysters grow faster



DOWN IN THE WARM, shallow waters of the Delaware and Chesapeake Bays, several companies are growing 5-year-old-size oysters in half the time.

The speed-up starts with 2-year-old oysters, brought from northern waters.

These are placed in trays, which are bare at low tide and covered at high tide. The combination of sun, warm water, an abundance of food, and an absence of mud and sand, works the miracle.

ACCELERATED . . .

Six months after being installed in their new home, they are 5 years old in size and ready to be eaten.

Like the oyster-growing people, there is another group of ingenious men who also have invented speed-ups. But their speed-ups do not concern oysters. They are interested in making packaging ideas grow faster.

If you, for instance, have a packaging idea kicking around, you might consult this group of ingenious men. It is highly probable that they can put your idea in marketable form in very short order.

"KNOW-HOW" . . .

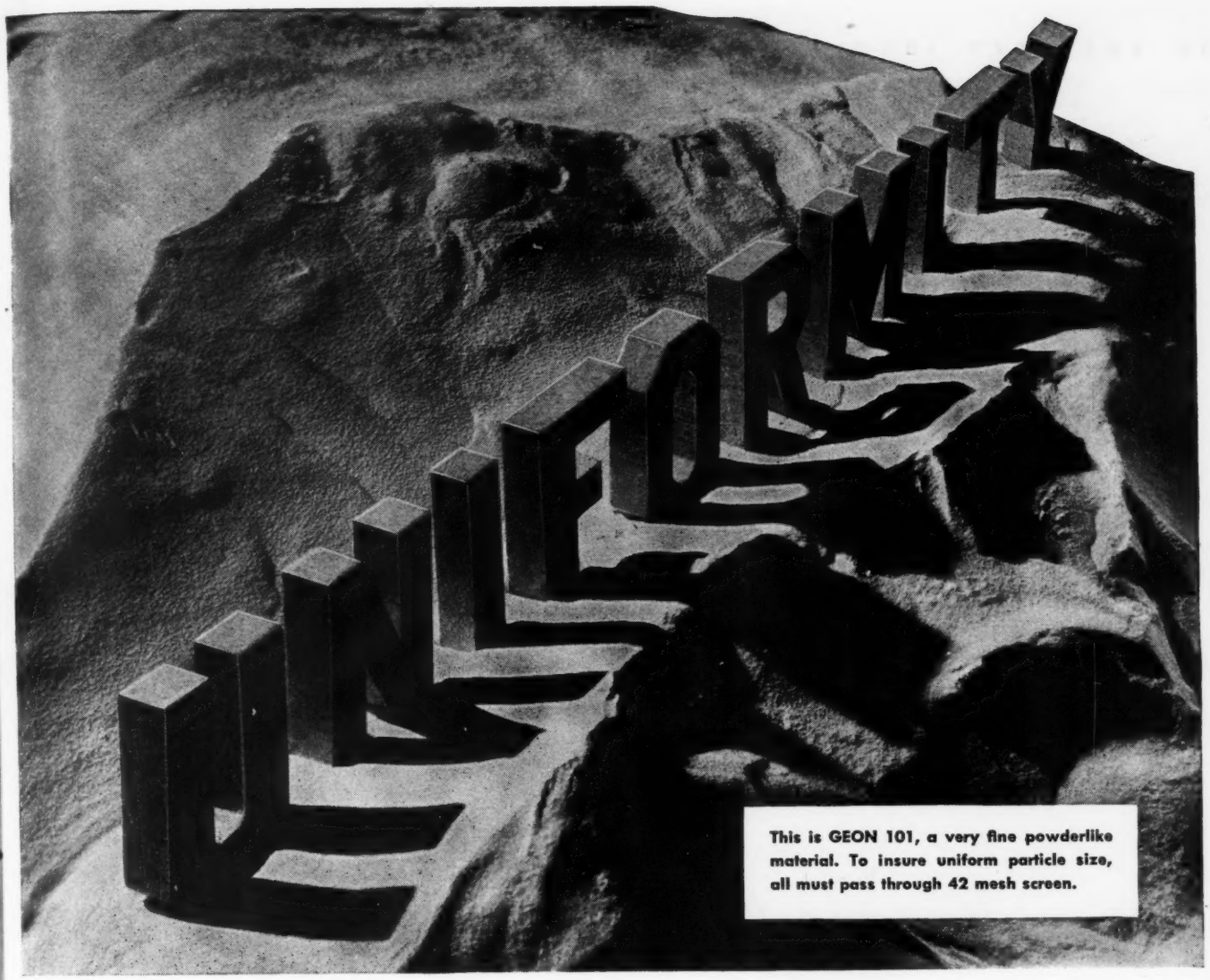
You see, this group—American Can Company—has been speeding up packaging ideas for more than forty-three years. Lately, it has acquired a lot of new experience along this line on war packages.

The research facilities of American Can Company are unparalleled. Its experience with marketing problems is extensive, sound, and comprises nearly every field of American business.

Let us see how you and we, American Can Company, can work together on your postwar packaging problems.

AMERICAN CAN COMPANY CANCO 230 Park Avenue • New York 17, N. Y.

World's Largest Manufacturers of Fibre and Metal Containers



This is GEON 101, a very fine powderlike material. To insure uniform particle size, all must pass through 42 mesh screen.

An important advantage offered by GEON *polyvinyl resins*

NEW users of GEON polyvinyl materials are invariably delighted to discover that these resins provide definite processing advantages resulting directly from the *uniformity* of the raw material.

For example, with GEON resins it isn't necessary to mix several batches together in an effort to get uniformity in the base material. Nor is there any need to adjust processing machinery frequently to compensate for batch-to-batch variations of the plasticized product. The formula used yesterday with one batch of GEON can be used today and tomorrow with new batches. And the finished product will be uniform—and that means satisfied customers, fewer rejects, better profit.

All this is true because manufacturing methods for GEON result in a material that is *uniform*—batch after batch after batch are all alike within close tolerances controlled by rigid specifications. For example, specific viscosity limits for GEON 101 are .52—.57. To control particle size, 100% must pass through 42 mesh screen.

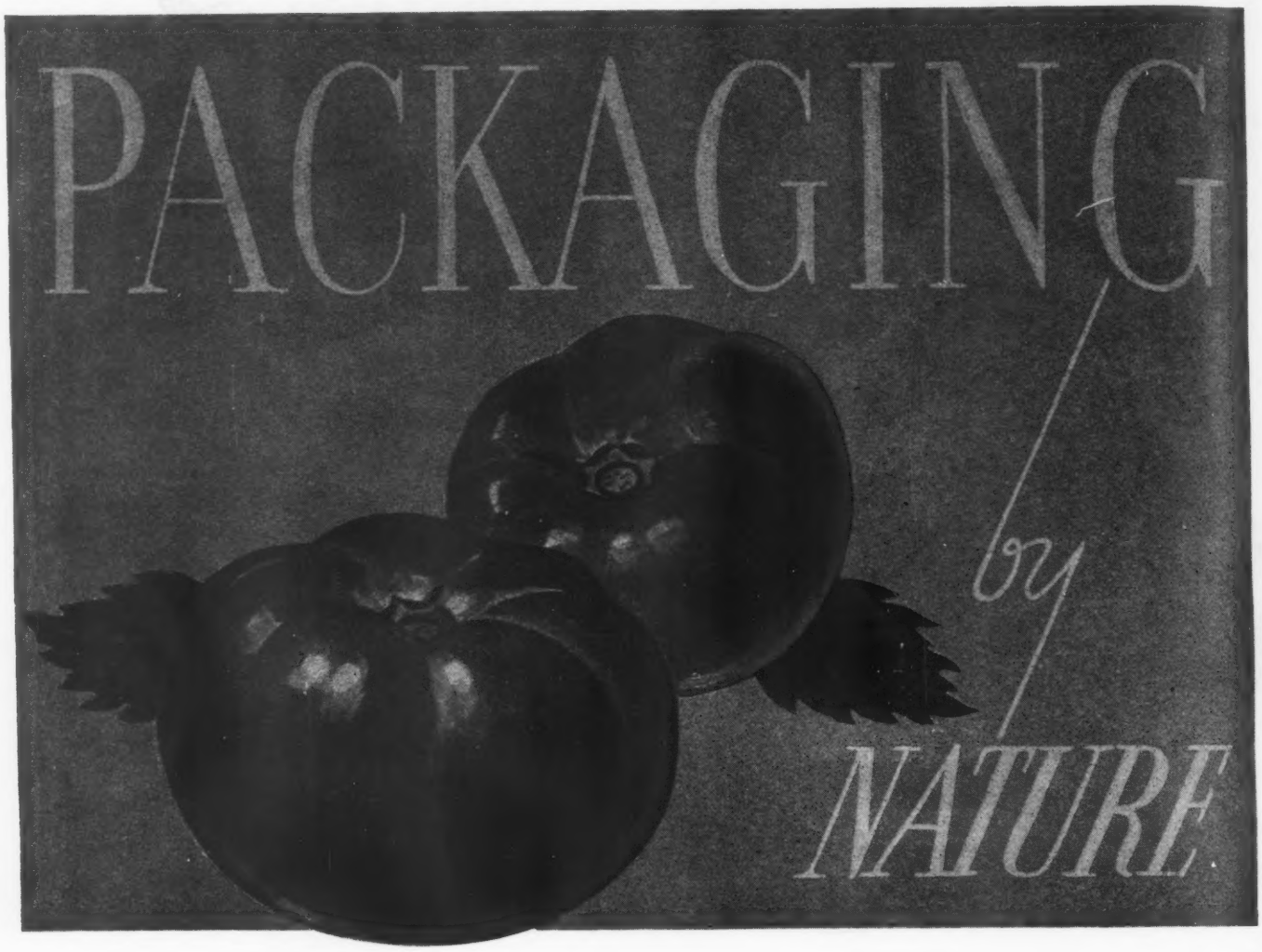
Another important advantage of GEON is that the right *combination* of properties for your product can be selected to meet the specific conditions of end use. These properties include resistance to water, heat, cold, aging, wear, abrasion, sunlight, chemicals, and many other normally destructive factors. For more information write Department LL-7, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

AN AMERICAN INSTITUTION WORKING WITH AND FOR AMERICA



The pageant of color brushed by Mother Nature upon her progeny is but subtle camouflage to glamorize the serious job being done by peel, pod and husk. *Protection to contents* is their vital role. However Nature's helping hand no longer serves when foods are processed for market. After this transmutation to a wide variety of sale-units, new conditions of environment necessitate *man-made* types of protective covering. Herein the science of the specialized papermaker is enlisted. The result is invulnerable protective packaging papers . . . papers that ward off decay, desiccation and mold while preserving nutritional and taste values plus eye-appeal.

Half a century invested in developing the highest type of food wrappings has fortified Rhinelander with experience and know-how today being utilized by foremost food packers. What is your packaging problem? Maybe we can help you.

RHINELANDER
PROTECTIVE PACKAGING
Papers

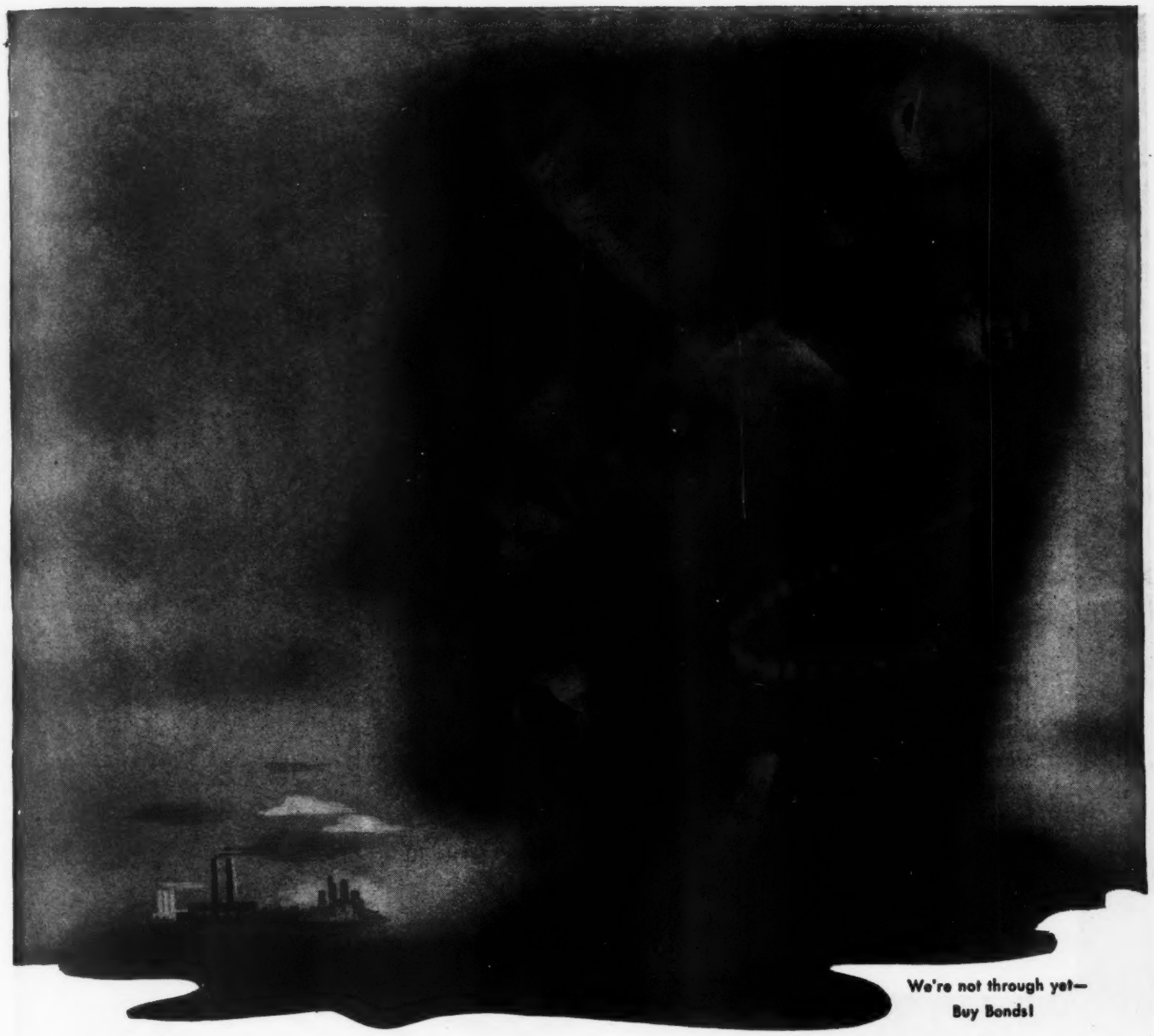
Wet Strength Glassines
Wet Strength Greaseproof
Genuine Greaseproof
Coffee Bag Papers

Confectionery Papers
Cereal Wrapping Papers
Laminated Greaseproof Papers
Lard and Shortening Liners

Heat Sealing Coated Glassines
Cracker Box Liners
Greaseproof Innerwraps
Moisture/Vapor-Proof Coated Glassines

Specialty Bag Papers
Wax Laminated Glassine
Opaque Label & Bag Glassine
Packing Industry Wrappings

RHINELANDER PAPER COMPANY • MILLS AT RHINELANDER, WISCONSIN, U.S.A.

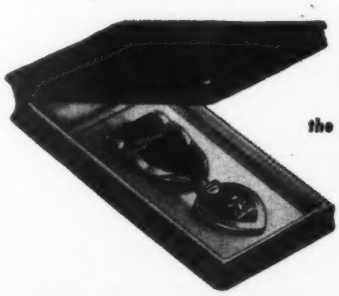


We're not through yet—
Buy Bonds!

get a Head-Start on your future boxes!

Right now, our country's demands take priority. For the present, we can only *look* into the future. We can plan ahead. • Are your products displayed to make headway against the stiff competition to come? Arrow has always sidestepped the obvious in box production—with fresh approach in design—resourceful use of materials.* • Get a head-start on your future boxes by consulting Arrow today.

* metal, plastic, wood or cardboard with coverings of velvet, leather, leatherette, fabric or paper.

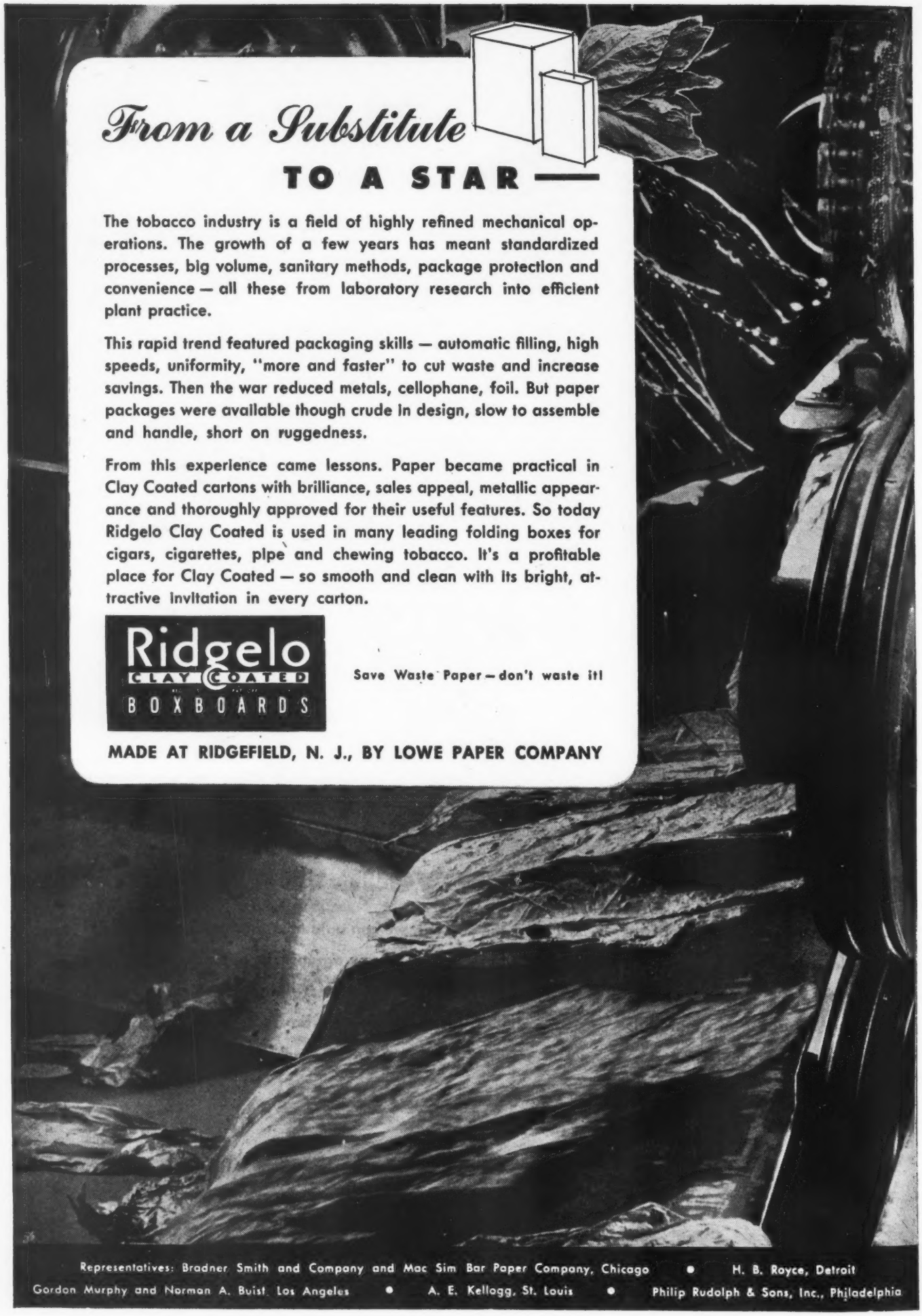


Arrow enters its fourth year of service in the production of boxes which hold the Purple Heart and many other medals for the heroes in our Armed Forces. And Arrow is proud that, throughout these years, it has maintained consistent leadership in serving this need of our Army and Navy.

Arrow

BOXES AND DISPLAYS

ARROW MANUFACTURING COMPANY INC. • FIFTEENTH AND HUDSON STREETS • HOBOKEN, NEW JERSEY


From a Substitute
TO A STAR —
The tobacco industry is a field of highly refined mechanical operations. The growth of a few years has meant standardized processes, big volume, sanitary methods, package protection and convenience — all these from laboratory research into efficient plant practice.
This rapid trend featured packaging skills — automatic filling, high speeds, uniformity, "more and faster" to cut waste and increase savings. Then the war reduced metals, cellophane, foil. But paper packages were available though crude in design, slow to assemble and handle, short on ruggedness.
From this experience came lessons. Paper became practical in Clay Coated cartons with brilliance, sales appeal, metallic appearance and thoroughly approved for their useful features. So today Ridgelo Clay Coated is used in many leading folding boxes for cigars, cigarettes, pipe and chewing tobacco. It's a profitable place for Clay Coated — so smooth and clean with its bright, attractive invitation in every carton.
Ridgelo
CLAY COATED
BOXBOARDS
Save Waste Paper — don't waste it!
MADE AT RIDGEFIELD, N. J., BY LOWE PAPER COMPANY
Representatives: Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Sons, Inc., Philadelphia

Are your corks doing only half their job?

YOUR corks can seal perfectly and still do only half their job! For your corks can help *sell* your product, too. And top-quality corks do help sell, by creating a favorable "first impression" in the mind of the user.

A quality cork, one that is easily removed and replaced, builds confidence in the quality of your product. On the other hand, a cork that breaks, whose top twists off or chips, is a major annoyance to the user. And that annoyance can unfavorably affect repeat sales.

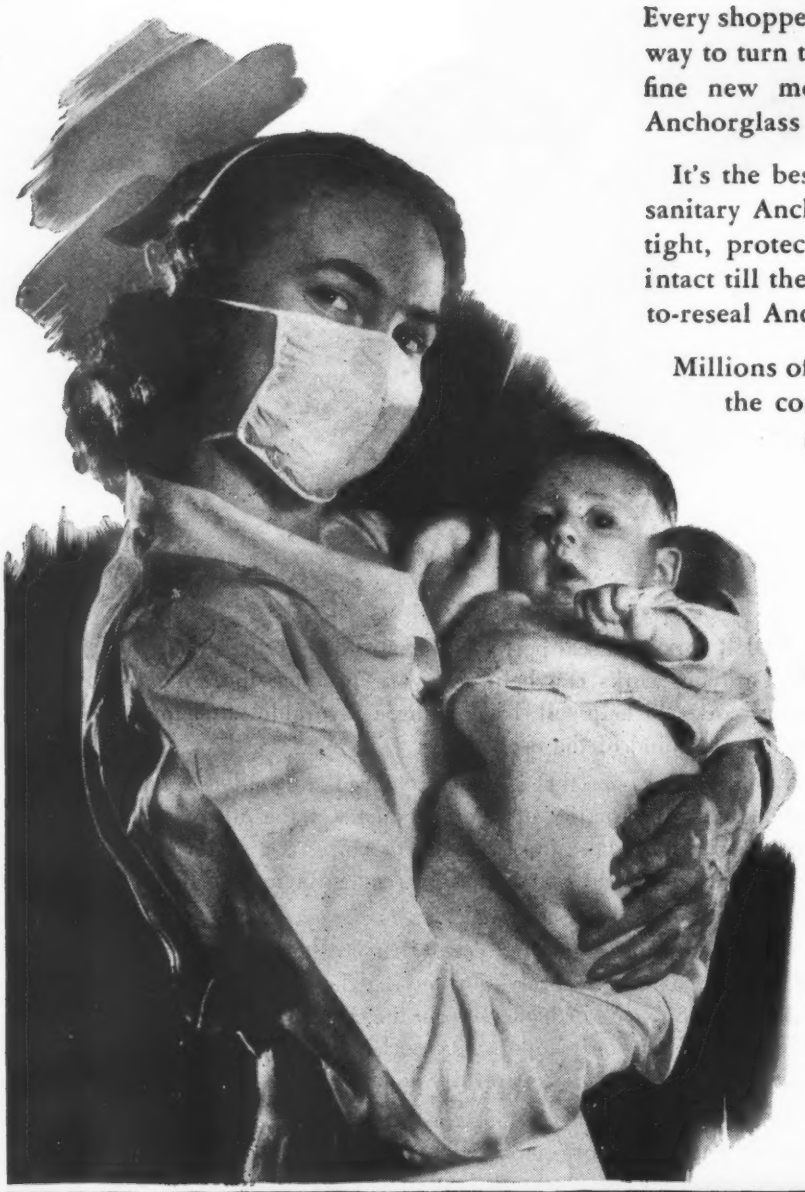
You can be sure of getting corks that do the whole job—that *sell,* as well as seal securely—by buying them from Armstrong. Armstrong's 85 years of leadership in the corks field is your guarantee of receiving only top-quality corks, expertly cut from the finest imported corkwood, carefully sorted.

For information about any of Armstrong's corks—shell, straight, tapered, flange-top, or embossed-top—get in touch with your nearest Armstrong representative, or write direct to the Armstrong Cork Co., Glass and Closure Div., 5907 Prince St., Lancaster, Pa.

ARMSTRONG'S CORKS and CAPS

Merchandising Tips-No. 2

The BEST way to introduce a NEW product . . . let people SEE it!



Every shopper is curious about *any new product.* The best way to turn that interest into sales is to let her see your fine new merchandise — in an inviting, crystal clear Anchorglass package!

It's the best way to bring her back for more, too. A sanitary Anchorglass container and the leakproof, air-tight, protection of an Anchor Closure keeps quality intact till the last bit is gone. The easy-to-remove, easy-to-reseal Anchor Cap makes every use a pleasure.

Millions of women prefer the honesty, the protection, the convenience of glass. Let us help you go to market in the right combination of Anchor-glass container and Anchor Cap to win instant approval.

Hear how Anchor Hocking is educating millions of your customers and retailers every week to the advantages of modern glass packaging — "Meet Corliss Archer" every Thursday evening, entire Coast-to-Coast Network, CBS.

ONE HAM ACT THE CUSTOMERS ALWAYS APPLAUD...

Preserving the Healthy Hue of Freshness in Hams with Keller-Dorian Packaging Papers!

IF YOU WANT YOUR PACKAGED MEATS THE CENTER OF ATTRACTION, avoid that off-color yellow in hams, bacon and other pork products. Eliminate possible fat rancidity due to light exposure . . . excess air circulation . . . and excess moisture vapor loss with K-D packaging papers.

Developed for wartime use to protect perishable products by reducing to a minimum spoilage caused by air, light, absorption moisture or dehydration . . . K-D Papers seal in the inherent goodness of foods.

These new functional papers are available in two structures: A plastic coating and an aluminum foil. Both are permanent and flexible. Neither will crack, peel or become tacky at temperatures between 190° above and 50° below zero (F). They may be heat sealed, scored, cut and folded to any size, shape or style package.

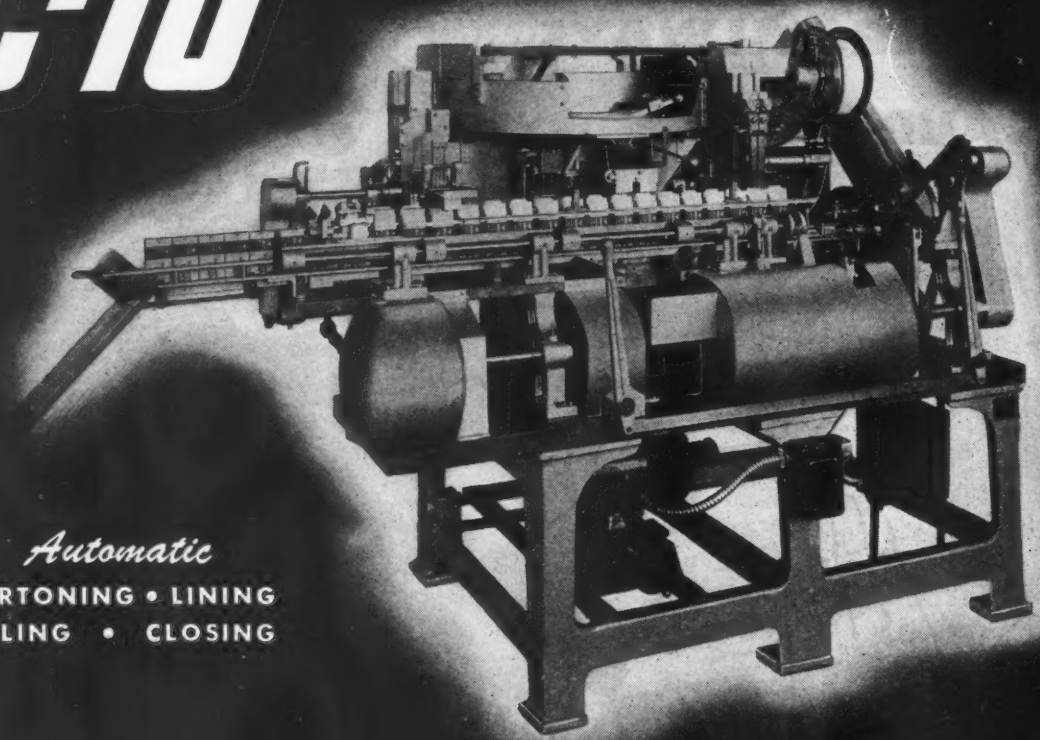
Plan now to get ahead of postwar competition. Why not take advantage of free testing samples and data sheets now available? Write Keller-Dorian for detailed information now.

KELLER-DORIAN
CORPORATION
Empire State Building
New York I, N. Y.

FUNCTIONAL PACKAGING PAPERS *for Protecting Perishable Products*

MODEL

C-10



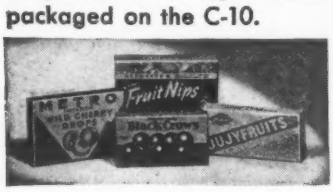
Automatic
CARTONING • LINING
FILLING • CLOSING

A Universal Machine that is the Universal Favorite for Cartoning Cough Drops and Candy

In a continuous automatic cycle, the Model C-10 closes the bottom, cuts the liner from a roll, forms and inserts the liner, counts and inserts the candy in the package, then tucks in and closes the liner and the top flaps of the carton. In packing cough drops, the liner is included to protect the contents. This liner is usually omitted in the packaging of 5c candies. For this operation the machine can be equipped to volume fill instead of count the contents.

The Model C-10 has proven itself over many years of trouble-free service. It is in use by all of the largest cough drop manufacturers who have found it the ideal machine to meet their packaging needs.

A few of the many cough drop and 5c candy cartons packaged on the C-10.



Send U.S. details on any of your packaging problems—we have the machines and the engineering background to help solve them.

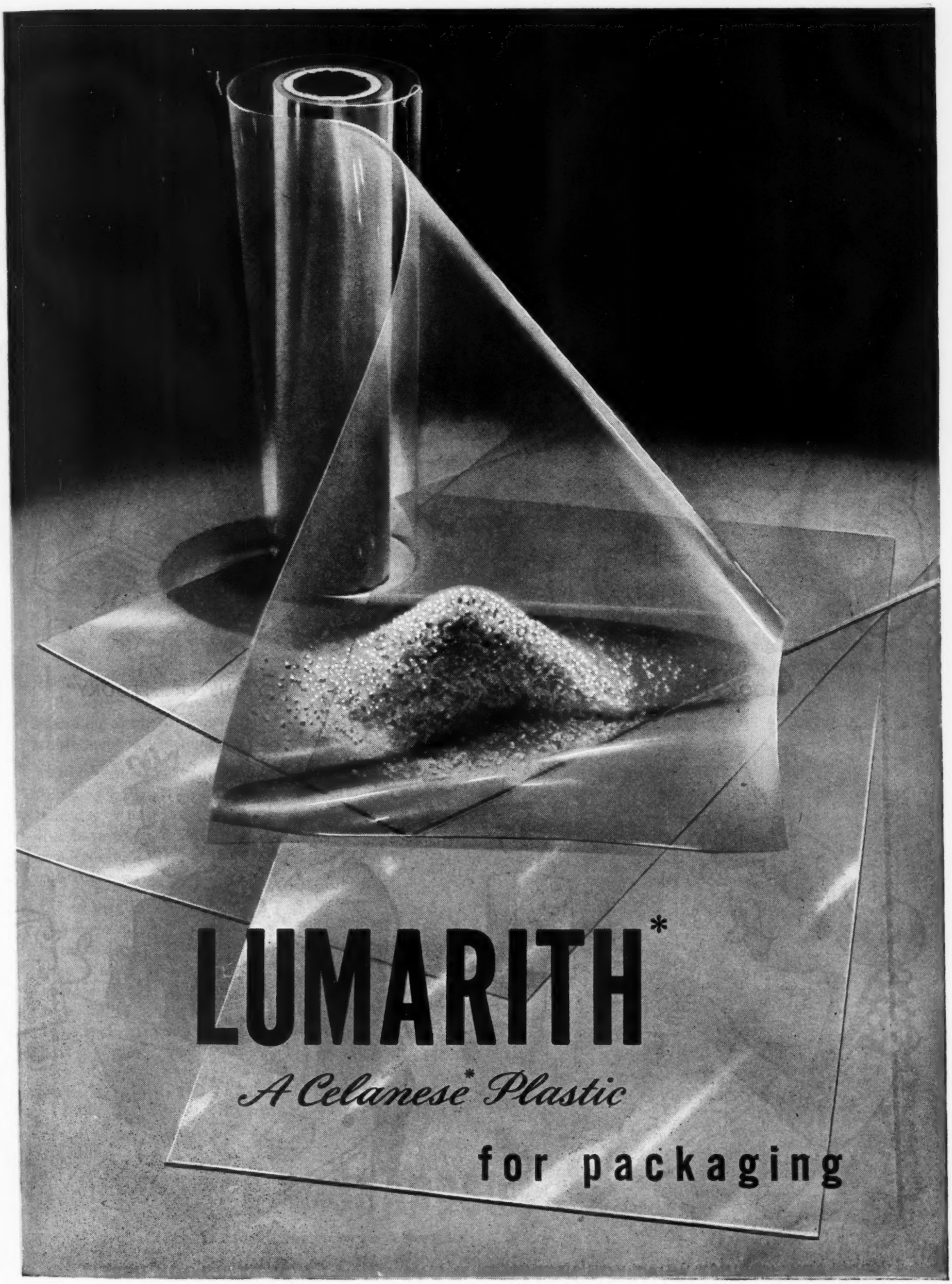
US *Automatic Box Machinery Co. Inc.*

Owning and Operating

NATIONAL PACKAGING MACHINERY CO. • CARTONING MACHINERY CORP.

18 ARBORETUM ROAD, ROSLINDALE, BOSTON 31, MASS.

Branch Offices: NEW YORK CLEVELAND CHICAGO
LOS ANGELES (KRUGH EQUIPMENT & SUPPLY CO.)

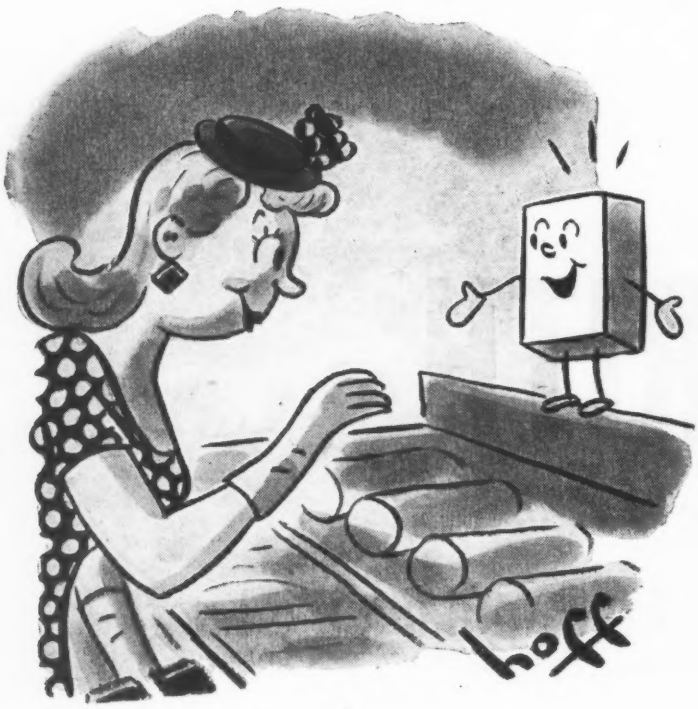


Write for Packaging Booklet. Celanese Plastics Corporation, *a division of Celanese Corporation of America*, 180 Madison Avenue, New York 16, N.Y.

* Reg. U. S. Pat. Off.

"LOOK HERE, LADY!"

"HEY, MISTER . . . LOOKY"



"SEE, LADY, I'M JUST WHAT YOU NEED"

"PST-T . . . LOOK HERE!"

"SILENT SALESMEN?"

NOT THESE! COATED LITHWITE MAKES 'EM TALK!

This revolutionary paperboard gives packages a crispness and freshness that makes them *speak out* on the shelf.

It will probably be some time before packages are actually wired for sound. But with the self-service idea spreading to almost every type of retail store, a new requirement is being put on packages.

It isn't enough for them to be "silent salesmen." As rising business costs swing more and more retailers over to mass self-serve displays, packages will have to *talk*. They'll have to out-talk their competitors. Talk their way off the shelf to the cash register.

And they can. *Coated* Lithwite folding cartons have already proved what they can do in mass displays. *Coated* Lithwite packages have a stand-out brightness and crispness because this revolutionary coated board takes ink better, reproduces colors more sharply and brilliantly. What's more, they have a quality look and feel that tips the scale in that split-second of indecision in a woman's mind.

Keep *Coated* Lithwite in *your* mind, as you get into your postwar packaging plans. Clip the memo, below . . . keep it for the day when Gardner-Richardson can again accept new orders for folding cartons that "talk," made of this revolutionary paperboard.

CLIP THIS!
File this Coated Lithwite memo for reference when this quality paperboard is again available.
1. Made by a revolutionary process. Coated Lithwite is the brighter, whiter paperboard that is formed, made and coated in one high-speed operation. Proved and improved for six years.
2. Means more eye-appealing cartons. Coated Lithwite's smooth, velvety, chalk-free surface forms a better base for printing inks and plates—reproduces even the smallest type cleanly, crisply. Brings colors up brilliantly —gives halftones a sharp realism.
3. Fewer jammers and leakers. Coated Lithwite scores accurately without flaking or shattering. Takes a positive, tight seal.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA . CLEVELAND . CHICAGO . ST. LOUIS . NEW YORK . BOSTON . PITTSBURGH . DETROIT

The flavor does not escape from these products. It's *sealed in* the modern way . . . by CEL-O-SEAL* bands.

Easily slipped on by hand over the primary closure, Du Pont CEL-O-SEAL cellulose bands shrink to form a tight, sure seal. They keep out dust, dirt and other impurities. The closure stays secure. It can't come loose in transit or as the result of inquisitive tampering.

And CEL-O-SEAL bands top off the package with an eye-appealing touch of color. They're available in a wide range of attractive hues, as well as distinctive color combinations. Your trade mark and sales message can be indelibly printed on the CEL-O-SEAL band, highlighting your product in mass displays.

Today, as you plan your packages of tomorrow, investigate the many advantages of CEL-O-SEAL bands. Write today for full information.

CEL-O-SEAL bands and WIND-O-BAND* seals are sold by:

E. I. du Pont de Nemours & Co. (Inc.)
"Cel-O-Seal" Section, Empire State Bldg., New York City 1

Armstrong Cork Company, Glass and Closure Division, Lancaster, Pa.

I. F. Schnier Company, 683 Bryant Street, San Francisco 7, Calif.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

*TRADE MARK

DU PONT CEL-O-SEAL BANDS

KIDDER POINTERS

No. 8. **Observations of trends and indications in packaging . . . noted by the manufacturers of Kidder "3 Point" Presses, Kidder Press Company, Inc., Dover, N. H.**

Use of colorful packaging to promote seasonal displays is an angle worth thought. F'rinstance—to the theme "Open Up the Package and Find Spring Inside", one smart dealer had his packages, in cheerful pastel hues, deliberately split open to disclose items to bolster a person's flagging morale after a hard winter.

Synthetic blood plasma, a by-product in sugar manufacture, is reported as a Swedish development.

Independent Grocers Alliance blueprints a real challenge to chains. Its "New Economy Plan" proposes to eliminate salesmen, ban credit, have wholesalers sell at cost, pep up retail merchandising methods, convert to self-service. All of which means an increasing job for packaging.

A lightweight waterproof packaging and fabricating material, described as a derivative of polyvinyl chloride, has been developed by the research laboratory of Goodyear Tire & Rubber Co., Akron, Ohio. Called Vitafilm, it can be woven also into colored and printed fabrics.

High consumer preference for streamlined shopping services is a trend indicated by the Census Bureau's labor force projections for 1950 which estimate around 18,000,000 women working or looking for work (the present war peak) . . . which should prove incentive to packagers of frozen foods and other easy-to-shop-for-and-prepare foodstuffs.

Waxed paper double, with an opening, stapled onto an empty book-match cover makes a non-sticking, convenient container for stamps.

Grocery Manufacturers of America has appointed a topnotch women's committee to direct a special project in the national campaign to promote descriptive labelling, particularly in the food field. Home economics directors of 15 of the largest food companies make up the committee under chairmanship of Esther Latzke, director of consumer service for Armour & Co.

Labelled by "Ad-libber" in ADVERTISING AGE (April 2, 1945) as "the most intriguing color illustration which has ever run in letterpress in a newspaper", the full-color "vegetable basket" illustration appearing in the Omaha *World-Herald* of March 19 is highlighted for its "intensity of color, register etc." . . . giving a clue to what may be expected in newspapers before too many years have passed.

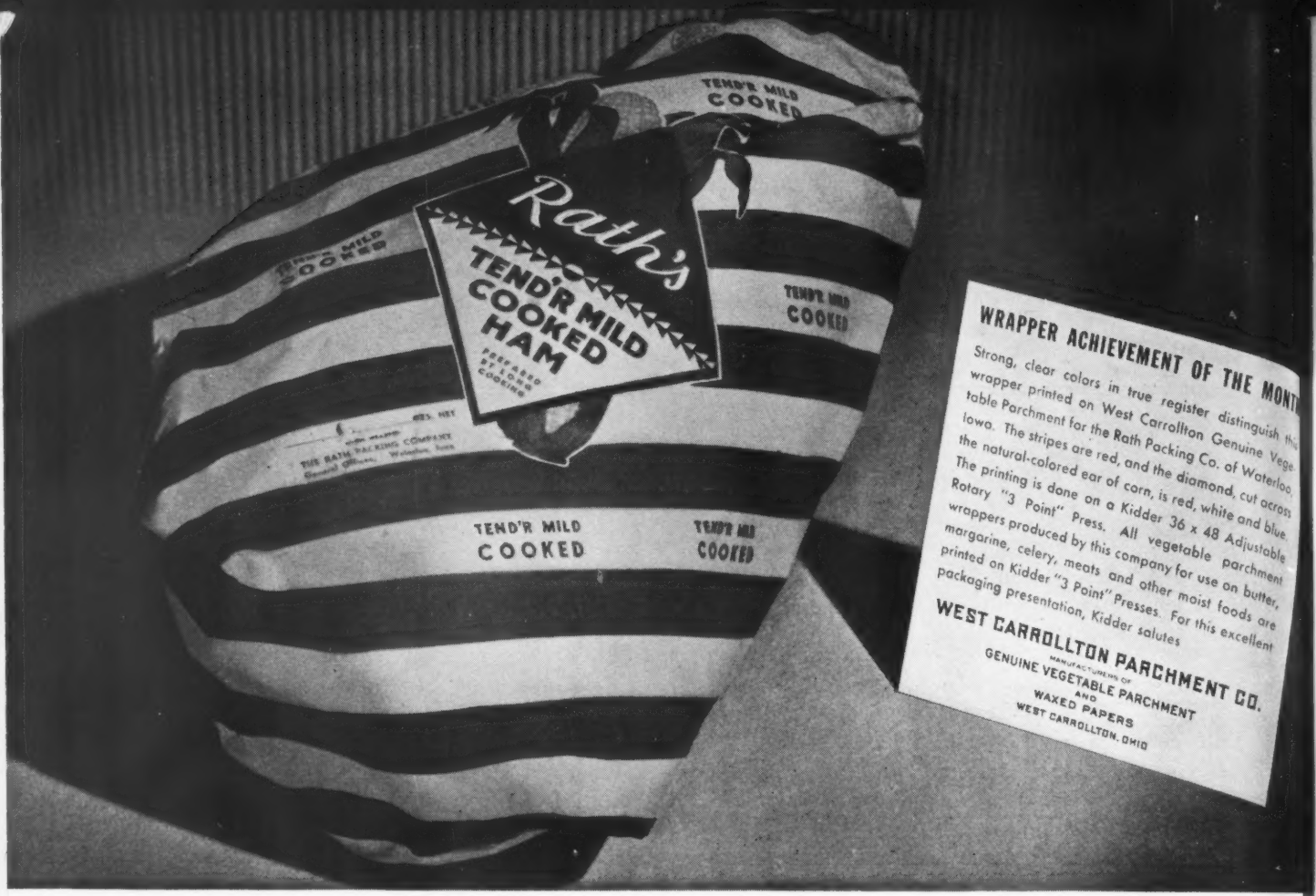
A definite labelling policy for cooperative products has recently been adopted by National Cooperatives Inc. with red for first grade, blue for second, green for third and where but one quality goods is represented, "any suitable color" will be used, according to a story in ADVERTISING AGE for April 2, 1945.

Brilliant and unusual packagings are foreseen for the toiletry field as soon as conditions permit—with style coordination of cosmetic products to tie in with fashion trends.

Supermarkets and their probable effects on the entire packaging industry affecting container materials and designs, labelling and art work are reviewed in "must" reading in PACKAGING PARADE for March, 1945.

The five essentials of a selling package are: 1. It must be practical, production-planned, economical to manufacture, easy to fill or pack. 2. It must fully protect and conveniently dispense the product. 3. It must be easy to handle, stack, display. 4. It must proclaim the quality and identity of your product. 5. It must be good-looking, memorable, attractive! comments a tell-all ad. by W. C. Ritchie & Co. of 8842 Baltimore Ave., Chicago 17, in MODERN PACKAGING for March, 1945.

KIDDER PRESS COMPANY, INC., ***Printing Machinery,*** **Dover, N. H.**


Rath's
TEND'R MILD COOKED HAM
TEND'R MILD COOKED
TEND'R MILD COOKED
TEND'R MILD COOKED
TEND'R MILD COOKED
WRAPPER ACHIEVEMENT OF THE MONTH
Strong, clear colors in true register distinguish this wrapper printed on West Carrollton Genuine Vegetable Parchment for the Rath Packing Co. of Waterloo, Iowa. The stripes are red, and the diamond, cut across the natural-colored ear of corn, is red, white and blue. The printing is done on a Kidder 36 x 48 Adjustable Rotary "3 Point" Press. All vegetable parchment wrappers produced by this company for use on butter, margarine, celery, meats and other moist foods are printed on Kidder "3 Point" Presses. For this excellent packaging presentation, Kidder salutes
WEST CARROLLTON PARCHMENT CO.
MANUFACTURERS OF
GENUINE VEGETABLE PARCHMENT
AND
WAXED PAPERS
WEST CARROLLTON, OHIO

KIDDER LOOKS AHEAD WITH CONVERTERS

by planning three types of wrapper presses

Kidder's "3 Point" trademark now represents . . . not only the three characteristics of quality printing—control over the paper, proper distribution of ink, accuracy of the impression . . . but also the three types of presses Kidder is planning to manufacture.

In addition to "3 Point" multi-color letter presses which have been used so widely in the converting industry for many years . . . and the Kidder "Aniliners" which were introduced so successfully just before the war, and now include their new Celloprinter . . . Kidder will introduce a line of unit-type gravure presses for cellophane, foil, pliofilm, etc. Individual gravure units can be purchased from time to time as customers' capacity requires.

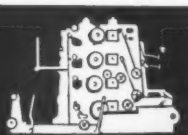
For information on any of these presses—or on Kidder's improved line of high-speed slitters and rewinders up to 115", get in touch with a Kidder engineer.

CONTROL OVER THE PAPER
PROPER DISTRIBUTION OF INK
ACCURACY OF THE IMPRESSION

KIDDER

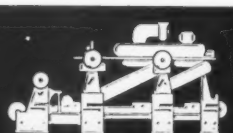
Manufacturer of "3 Point" Presses—so-called because they fulfill the three major requirements for perfect printing.

KIDDER
THREE POINT
PRESS



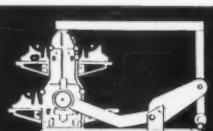
MULTI-COLOR LETTER PRESSES

for waxed paper, box wrappers, etc., rewound or sheet-delivered — up to 72 inches.



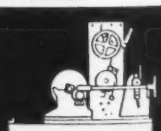
MULTI-COLOR "UNITYPE" GRAVURE PRESSES

for cellophane, foil, pliofilm, etc., — up to 36 inches.



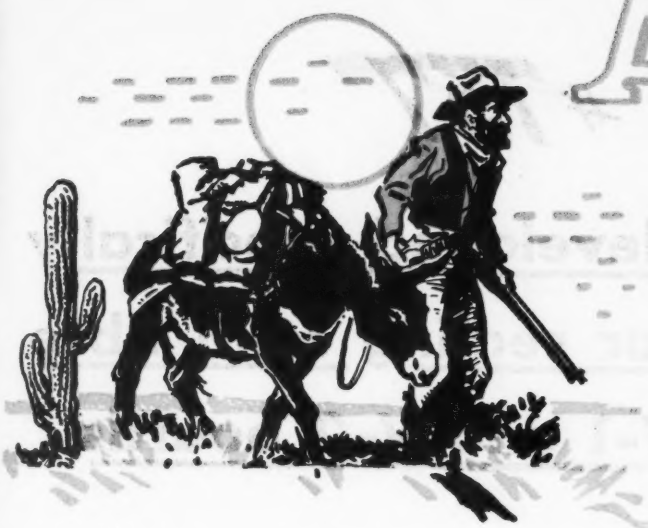
"ANILINER" and "CELLOPRINTER" MULTI-COLOR PRESSES

for decorative papers, cellophane, glassine, etc., — up to 65 inches.



SLITTERS AND REWINDERS

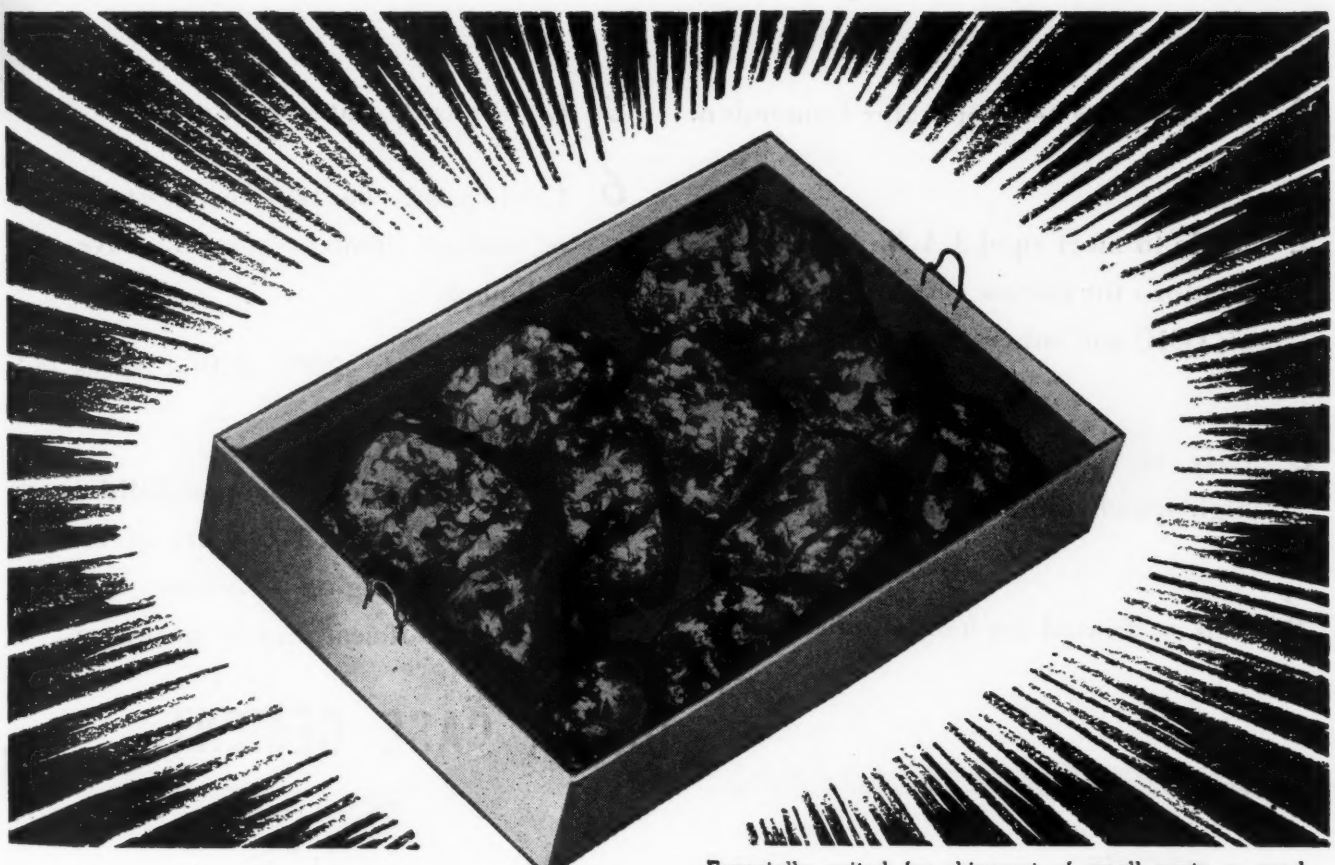
for paper mills, finishing rooms and small-roll, high-speed slitting — up to 115 inches.



AS all-purpose shipping containers, Mason MailMasters really "strike it richl" For their uses are legion — the packaging of drugs, spectacles, watches, pipes, small replacement parts, etc. . . . yes, even western lode that is shipped East by a prominent geologist for analysis at a well-known university.

If, after Victory, you need a safe, convenient shipping container particularly suited for assembly line packaging . . . if, you want built-in strength and ruggedness that ensures proper delivery of your postwar product, you'll want to include Mason MailMasters in your peacetime plans.

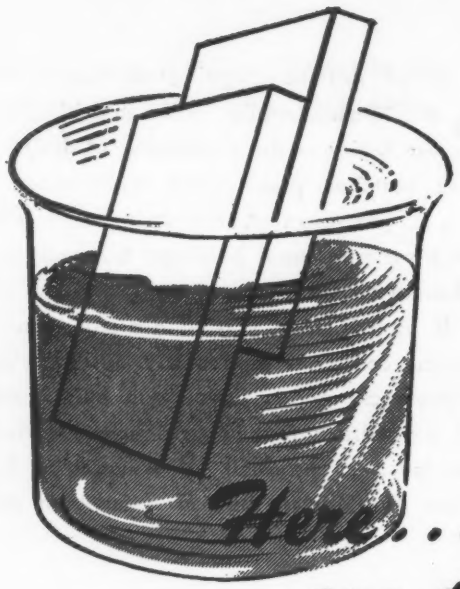
BUILT TO CARRY THE LODE!



Especially suited for shipment of small parts or products, the patented Mason MailMaster is playing an important role in the packaging of Victory-essential supplies.

The MASON BOX COMPANY

ATTLEBORO FALLS, MASS.—175 5TH. AVE., NEW YORK



#737

developed specifically for sealing solid fibre V-1 and V-2 boards

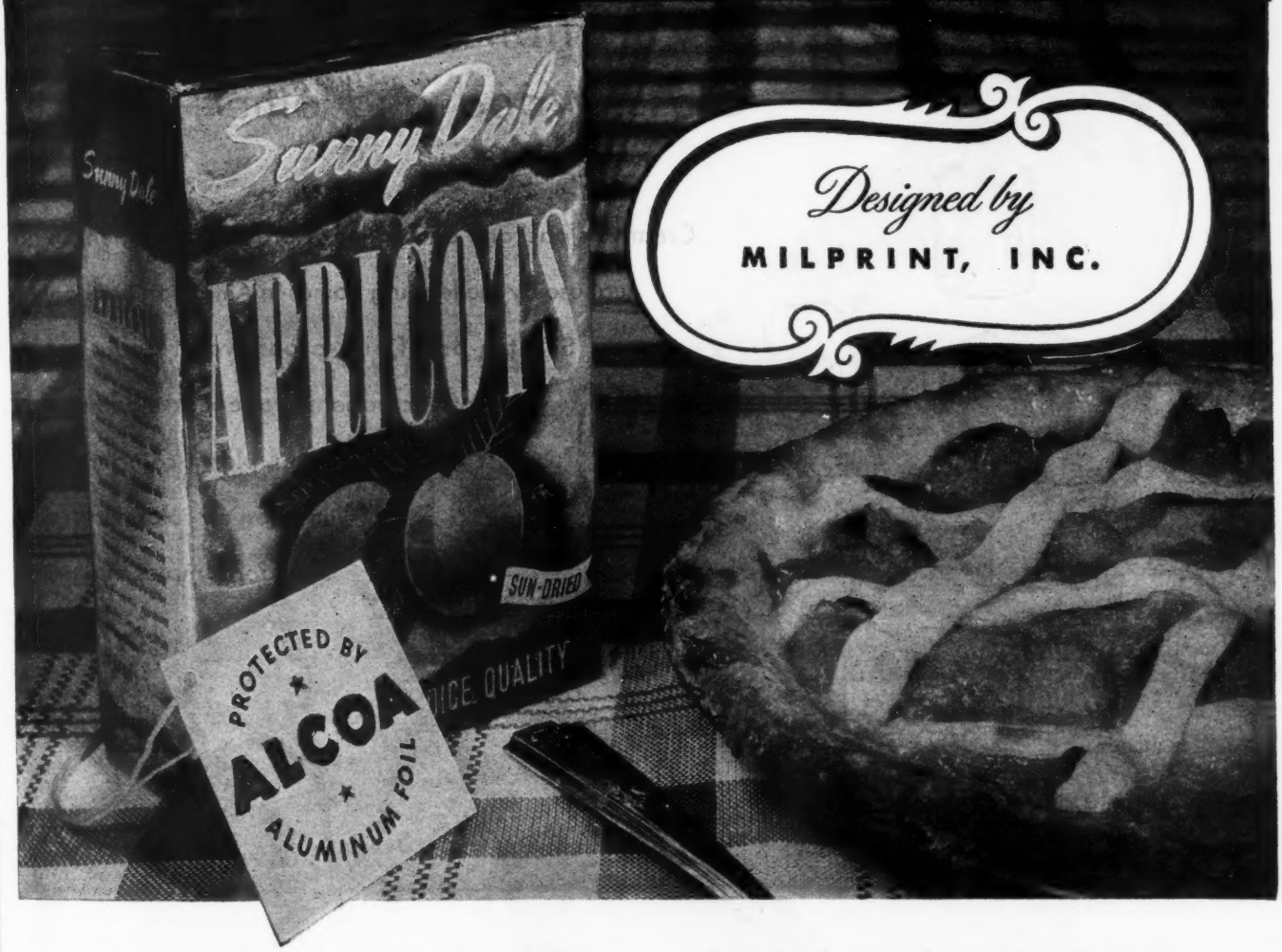
Here... are the facts...

1. Passes every test for water immersion.
2. Made to meet rigid J.A.N.-A-101 specifications for carton cements to be used on QMC and other government orders.
3. Easy to handle, designed for use on high-speed case-sealing machines.
4. Can be diluted for hand application.
5. Gives a truly waterproof seal.
6. Used by the country's foremost packers of military food supplies for overseas shipment.
7. Sealed nearly 200 million cases last year.
8. Remarkable post-war possibilities are suggested for #737 by its success in military packaging — for use wherever a waterproof seal may be necessary.

DAREX CASE CEMENT #737 for a waterproof seal

A PRODUCT OF
DEWEY AND ALMY CHEMICAL COMPANY
CAMBRIDGE 40, MASSACHUSETTS

A BETTER PACKAGE FOR DRIED FRUITS



Send for a full color picture of this eye-pleasing package.

Talk about shelf appeal! About a package "leaping to the eye" and selling itself! Gentlemen, you should see this one—*in color!*

Using the natural sparkle and glamour of Alcoa Foil as a background, the designer has glorified it with the rainbow. A more colorful and appealing package would be hard to imagine.

But eye-beauty isn't its only beauty. It protects the product better. Dried fruits stay moist and tender longer when packaged in Alcoa Aluminum Foil. Moisture content is locked in more securely than with other wrappers.

For the perfect combination of beauty and protection for dried fruits—or any other product that is affected by moisture gain or loss—talk to your package designer or supplier about using Alcoa Aluminum Foil.

For a color picture of this package, write ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM FOIL

PERMANENT

Surface Decorations On Every Type Of Package!

New Process Allows Integral Color Decoration of Plastics, Metal, Glass, Wood and other Surfaces

Creative's package decoration is proved permanent in actual use by the leading names in American packaging. Scratch-proof, rub-proof, water and alcohol-proof decorations, trade-marks and designs on dials, bottles, plastic containers, etc. No limitation on colors or design. Send for samples and prices.

Creative

PRINTMAKERS GROUP

14 West 17th Street — NEW YORK 11 · CH 3-6800

Surface Decorators for the Packaging Field

IN A SHOW or a Showcase Beauty SELLS

FOR COLUMBIA PICTURES, the *beauty* of lovely Anita Louise attracts thousands, packs theatres—*sells* tickets. Never do *movie producers* underestimate the selling power of beauty. It SELLS their products. It *can* sell yours.

Anita Louise, in Columbia's Technicolor Production "The Bandit of Sherwood Forest"

FOR MAX FACTOR'S FACE POWDER, sold to discriminating women, the *beauty* of packages by Ritchie is a recognized, powerful selling factor. Because an *attractive* package *compels* attention, *suggests* superior quality, and WINS SALES!

Ritchie leads in making *packages that SELL!*

WAY TO A BETTER PACKAGE. The Ritchie way integrates art and artisanship—to give you a better package at a low unit cost. A Package that quickly, unmistakably identifies, fully protects and conveniently dispenses your product. A practical, production-planned package—easy to fill or pack, easy to handle, to stack and display—but *above all* designed for eye-appeal, for quality-impression, for *beauty that sells!*

THE 5 ESSENTIALS OF A SELLING PACKAGE

1. It must be practical, production-planned, economical to manufacture, easy to fill or pack.
2. It must fully protect and conveniently dispense the product.
3. It must be easy to handle, to stack and display.
4. It must *proclaim* the quality and identity of your product.
5. It must be "good looking," memorable, ATTRACTIVE!

W. C. Ritchie and COMPANY

8848 Baltimore Avenue • Chicago 17

SET-UP PAPER BOXES • FIBRE CANS • TRANSPARENT PACKAGES

NEW YORK
DETROIT
LOS ANGELES
ST. LOUIS
MINNEAPOLIS

"The bigger the family—the better the service"

THAT'S a fact in any well-run family! And no family's better equipped to meet *your* packaging needs than Continental. Extensive resources and facilities plus technical skill and long experience will solve *your* container question. Our experts will analyze it impartially.

Continental now covers every phase of packaging—metal containers, liquid-tight paper cups and containers, fibre cans and drums, steel pails, various heavy duty containers.

Right now we're busy meeting Uncle Sam's needs. But keep your eye on Continental! And on Continental's trademark, too! The Triple-C stands for one company with one policy—to give you only the best in quality and service.

Tune in: "REPORT TO THE NATION" *every Sunday over coast-to-coast CBS network*

Continental Fibre Drums—Continental makes a full line of fibre drums, both the all-fibre and the metal-end types, for shipping dry bulk products; powdered milk and eggs, spices, meat seasonings, cocoa, food colorings, dehydrated foods, bakers' supplies, and fine flaked or powdered chemicals. Continental Drums come in a wide range of sizes; most popular is "LEVERPAK," 12 gal. to 75 gal. capacity. Others are "FIBERPAK" (an all-fibre drum), ¾ gal. to 67 gal., and "STAPAK," 2 gal. to 32 gal. Wide selection of linings, coatings, treatments and constructions to meet specific requirements.

CONTINENTAL C PAPER DIVISION

CAN COMPANY, INC.

FIBRE DRUMS The Container Co., Van Wert, Ohio

LIQUID-TIGHT FOOD CONTAINERS — Boothby Fibre Can Co. Roxbury, Mass.

PAPER CUPS AND FOOD CONTAINERS — Mono Containers Newark, N. J.

COMBINATION PAPER AND METAL CONTAINERS

Headquarters: 330 W. 42d St., New York 18, N.Y.

13 Plants—Sales offices in all principal cities

PROCTER & GAMBLE has shipped Millions of Pounds of Shortening Safely in these

MEHL

POUCH-TYPE

PARCHMENT LINERS

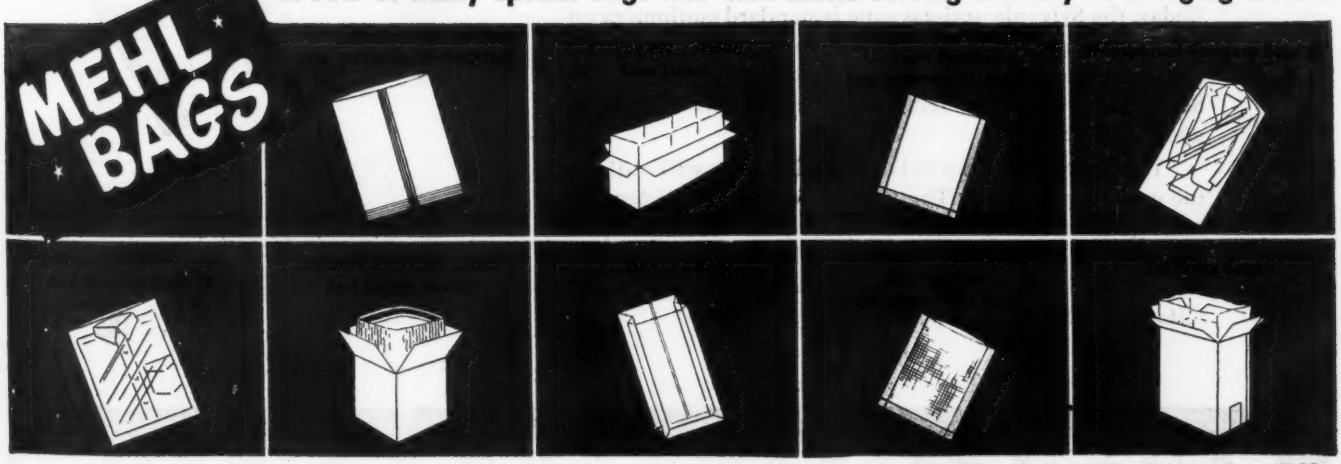
When is a substitute not a substitute?
When it does a better job — cheaper!

That is exactly what these Parchment Liners have done for P&G during the past few years. The development of the Mehl Liner coincided with the need for a practical container to replace metal and Procter & Gamble was quick to adopt it — with complete satisfaction. Other shippers of lard, fats, shortening and butter have used it with equal success. If your product requires grease-proof, leak-proof, odor-proof packaging . . . if you are interested in the savings possible through the use of a low-cost, disposable container which requires little storage or shipping space . . . we will be glad to send a representative to discuss the adaptability of Mehl Liners to your particular packaging requirements.

★ EASY TO PACK
4 SIMPLE OPERATIONS

SAMPLES OF MEHL PARCHMENT LINERS FOR TESTING PURPOSES WILL BE SENT ON REQUEST

A Few of Many Special Bags and Case Liners Serving Industry's Packaging Needs:



★ Out of production until cellophane is available.

A DIVISION OF MEHL BAGS SYDNEY-THOMAS CORP.

MEHL MANUFACTURING COMPANY

DIVISION OF SYDNEY-THOMAS CORP.

2351 FERGUSON ROAD, CINCINNATI 5, OHIO

277 BROADWAY, NEW YORK 7, N. Y.

CONVERTERS OF PROTECTIVE PAPERS • CELLOPHANE • LAMINATED FOILS • and other PAPERS and FILMS

SYLVANIA Means Cellophane ...it Keeps Gas Out

...Keeps Freshness In

Today, the Sylvania anti-gas cape is standard equipment on the fighting fronts. Inside its cellophane walls a soldier is safe from skin-blistering mustard and lewisite gases... yet he has good visibility and freedom to use his weapon to good advantage.

Tomorrow, versatile Sylvania cellophane will still set the pace in protection. The unique qualities that keep gas out, together with its other characteristics, will mean equal efficiency in keeping more foods in tip-top condition. For the discoveries Sylvania is making today will mean better cellophanes for the postwar world.

SYLVANIA CELLOPHANE

Made only by SYLVANIA INDUSTRIAL Corporation

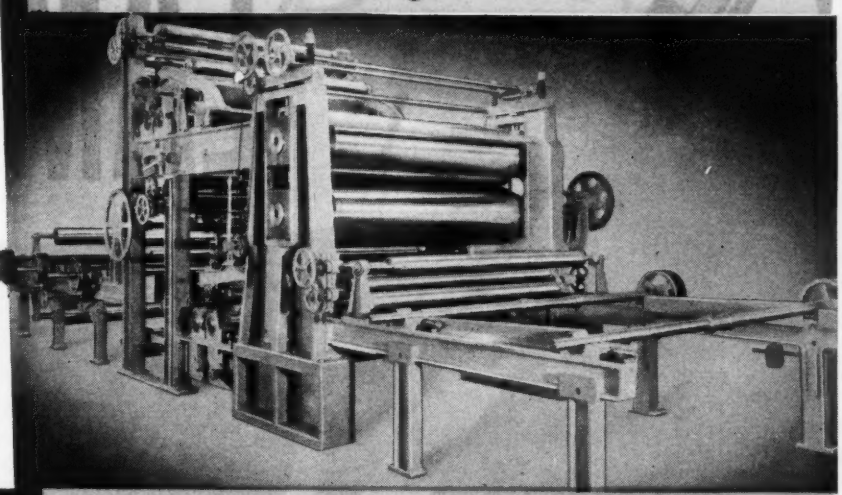
Manufacturers of cellophane and other cellulose products since 1929

General Sales Office: 122 E. 42nd St., New York 17, N.Y. ★ *Plant and Principal Office:* Fredericksburg, Va.

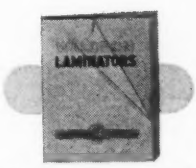
SYLVANIA CELLOPHANE

• Registered Trade Mark

PART OF THE PICTURE of famous products



WALDRON LAMINATORS



Send For This NEW CATALOG

Just off the press! It explains the principle, advantages and modern methods of laminating. Illustrates and describes the many types of WALDRON Laminators. Request a copy on your letterhead. No obligation.

Essential protection for the food of our fighting men is a vital assignment entrusted to Dobeckmun's Metalam. This effective heat sealing and moisture proof combination of aluminum foil and laminated acetate film for packages safely carries dry or liquid rations without danger of spoilage. Here is a typical example of the almost unlimited variety of products that can be produced by combining two or more plies of different materials by means of proper laminating on WALDRON Machines. Whether the essential requirement is protection, rigidity or decorative quality or a combination of all, there's a modern WALDRON LAMINATOR designed to produce the product.

Why not consult our experienced engineers on the possibilities for your product—present or planned?

- Coating Machines
- Crepeing Machines
- Embossing Machines
- Gumming Machines
- Floor Covering Machines
- Printing Machines
- Wall Paper Printing
- Waxing Machines
- Winders and Slitters
- Special Design Machines

JOHN WALDRON CORPORATION
Main Office & Works — NEW BRUNSWICK, N. J.

WALDRON
Paper Converting Machinery

LAMINATED

FOIL *goes on a Bender!*

"Nothing can be left to chance!" That is the watchword at Reynolds.

In the packaging laboratory each new problem is answered only after exhaustive tests have been made on every possible material and method.

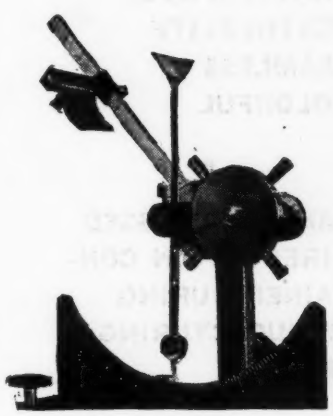
This machine calculates the stiffness of foil, paper, laminations. One small test among hundreds!

There are twelve highly specialized departments in Reynolds completely equipped, modern packaging laboratory . . . dedicated now to the aim of developing better packaging to help hasten final victory in the Pacific.

The needs of war have brought about packaging miracles! Undreamed of improvements have been made in the rolling, laminating and sealing of foil materials.

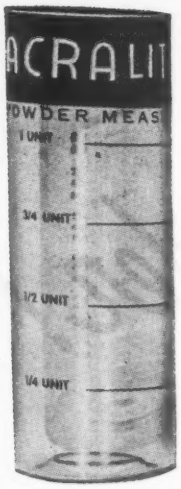
If you are interested in knowing how these new developments can help deliver your products to the public in better condition and with greater sales appeal than ever before—Reynolds technicians will be glad to tell you.

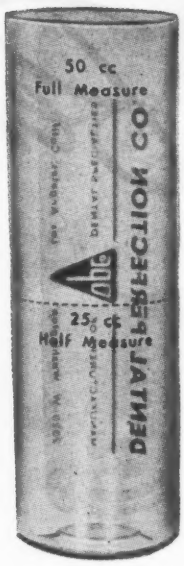
Address inquiries to: Reynolds Metals Company, Reynolds Metals Building, Richmond 19, Virginia. For 25 years the world's largest producer of foil!



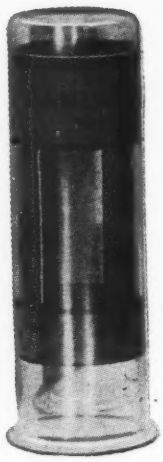
REYNOLDS METALS COMPANY

REYNOLDS METALS





Clearsite* *plastic* containers



MEASURE MARKED *accurately* for SPECIAL USES

SHATTERPROOF
FEATHERLITE
SEAMLESS
COLORFUL

•

LABEL PROCESSED DIRECTLY ON CONTAINER DURING MANUFACTURING PROCESS.

Containers like these clearly indicate quantities prescribed for specific purposes. Measurements are accurately registered on vials during manufacturing process. The transparent, *shatterproof* and *seamless* advantages of CLEARSITE made them practical *and* attractive.

Ideas from a wealth of Experience are at your Service!

CELLUPLASTIC CORP.

CELLUPLASTIC CORPORATION

40 AVENUE L NEWARK, N. J.

WEST COAST REPRESENTATIVES: CONTAINER SERVICE CO., 1266 North Western Avenue, Los Angeles 27, Cal.

For that "Fresh as a Daisy" appearance and taste, package your cheese in SPECIAL COATED CELLOPHANE POUCHES and WRAPPERS. These protective pouches and wrappers are moisture-proof and when heat-sealed are airtight. Their delicate transparency lends new sales appeal to your cheese by enhancing its factory freshness and purity. Available unprinted or printed in one, two or more colors. Samples and quotations on request.

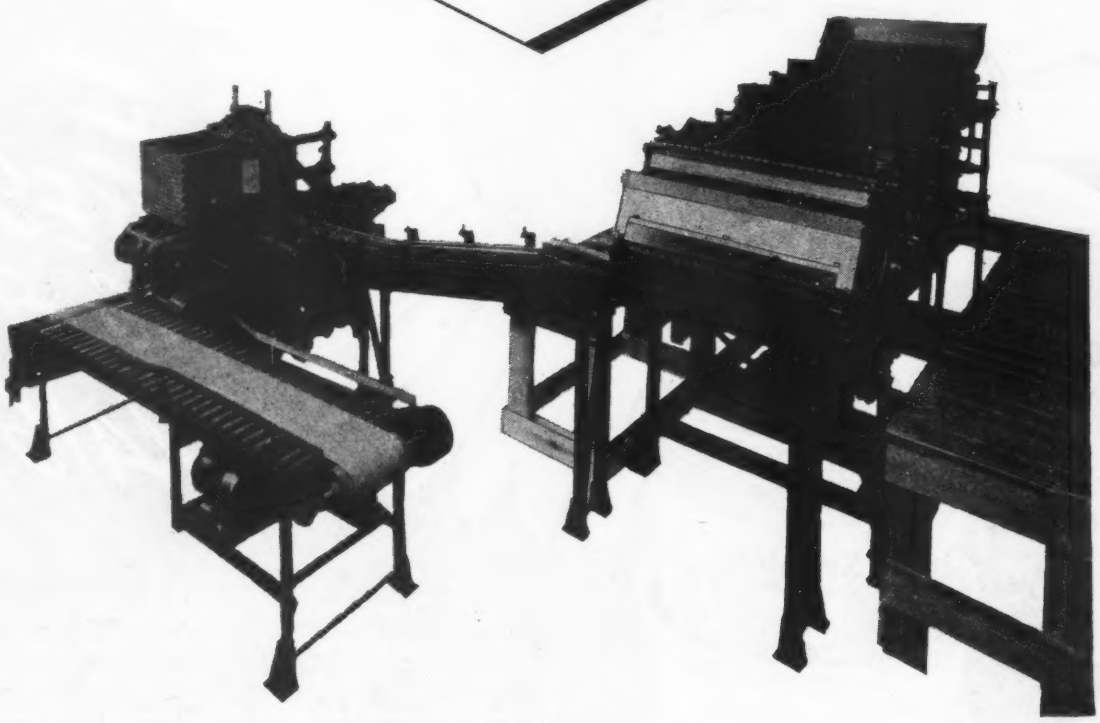
GENERAL FELT PRODUCTS

DIVISION OF

STANDARD CAP AND SEAL CORPORATION

68 THIRTY-FIFTH STREET **BROOKLYN 32, N.Y.**

THE MACHINE THAT COUNTS TO 1240.



STANDARD-KNAPP is known for the design and construction of unique packaging machinery—the one shown above is among the most unusual we have ever made. This machine takes flashlight battery shells dumped helter skelter into the scoop at the upper right. It unscrambles them and puts them in regular rows all facing the same way. They are then run, automatically, into a single row and counted in quantities of 1240 into the packing unit. The packer then pushes the 1240 shells into a case. The next station is an automatic sealing machine (also by STANDARD-KNAPP) which completes the operation.

This is one example only, of STANDARD-KNAPP'S mastery of machine design and construction. STANDARD-KNAPP equipment is widely used in the largest packing plants to perform high speed, automatic, accurate tasks with special emphasis on case packing and case sealing.

STANDARD-KNAPP CORP.

MANUFACTURERS OF CASE SEALING, CASE PACKAGING, AND CAN LABELING MACHINES

FACTORY and GENERAL OFFICES—PORTLAND, CONNECTICUT

570 Lexington Avenue, NEW YORK 22, N. Y. — 221 North LaSalle St., CHICAGO 1, ILL. — 145 Public Square, CLEVELAND 14, OHIO — 300 Seventh Street, SAN FRANCISCO 3, CALIF.

420 S. San Pedro Street, LOS ANGELES 13, CALIF. — 3224 Western Avenue, SEATTLE 99, WASH. — 1208 S. W. Yamhill Street, PORTLAND 5, OREGON — Paul Brown Building, ST. LOUIS 1, MO

Windsor House, Victoria Street, LONDON, ENGLAND

70 PRODUCTS THAT CAN BE PACKED SAFELY IN ALCOA ALUMINUM TUBES

The following products have, by test, been found satisfactory for packaging in either plain or interior coated aluminum collapsible tubes:

ADHESIVES
Collodion—cements
Lacquer—cements
Library—pastes
Rubber—cements

COSMETICS
Brushless—shave creams
Brush-type—shave creams
Cleansing—creams
Cold—creams
Hair Wave set—preparations
Hand—creams
Hand—lotions
Insect repellent—creams
Liquefying—creams
Mascara—compounds
Shampoo—creams
Tissue—creams
Vanishing—creams

DENTIFRICES
Alkaline—tooth pastes
Antiseptic—tooth pastes
Neutral—tooth pastes

DETERGENTS
Hand soap—pastes
Paint cleaner—pastes
Wallpaper cleaner—pastes

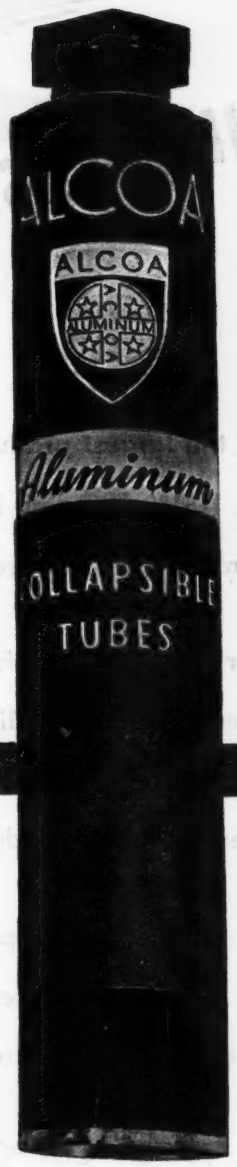
FOODS
Anchovy—pastes
Compounded Fruit Jams and Jellies
Concentrated Citrus Juices
Confection Toppings
Honey, 100% Pure
Peanut Butter
Prepared Cheese Spreads
Sardellen Butter

PHARMACEUTICALS
Ammoniated Mercury—ointment*
Analgesic—balms
Antiseptic—ointments
Belladonna—ointments*
Boric Acid—ointments*
Calamine—ointments
Chloramine-T—ointments
Chrysarobin—ointments*
Diachylon—ointments*
Eczema—ointments
Guaicol—ointments
Hormone & Vitamin—ointments
Iodine—ointments*
Iodoform—ointments*
Mercurial—ointments*
Mercuric Nitrate—ointments*
Nasal—jellies
Nutgall—ointments*
Ophthalmic—ointments
Phenol—ointments*
Rose Water—ointments*
Sterile Lubricating—jellies
Stramonium—ointments*
Sulfadiazine—ointments
Sulphur—ointments*
Tannic Acid—ointments*
Tar—ointments*
Unguentum*
Venereal—jellies
Yellow Mercuric Oxide—ointments*
Zinc Oxide—ointments*

TECHNICAL & MISC. PRODUCTS
Buffing Compound
Caulking Compound
Concentrated Color Paste
Lubricating Greases
Printers Inks
Soft Putties

SHOE POLISHES
Shoe—creams
Shoe Paste—polish

*U.S.P.



If you make any of these 70 products, chances are excellent that you can use Alcoa Aluminum Tubes successfully when they become again available to all who want them. This list is based on hundreds of tests made in the Alcoa Packaging Laboratory on samples supplied by various manufacturers of the products named.

To make certain that you *can* use aluminum tubes, either plain or with an interior coating, the Alcoa Packaging Laboratory will run a series of punishing tests on your product packed in Alcoa Tubes. This testing procedure is standard practice with us before we recommend the use of Alcoa Aluminum Tubes for any specific product.

Let this work be done now so you can know the answer by the time aluminum tubes are freely available. Tests can easily be arranged by writing ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh 19, Penna.

ALCOA FIRST IN **ALUMINUM**

ALCOA ALUMINUM

• • INCREASES PLYWOOD PRODUCTION 100%

One of the largest producers of plywood has increased normal press production 100% by using Diafane . . . not as a transparent wrap, but in the actual manufacturing process.

All over the world, Diafane shows up in strange war-time applications. It is used to check sterilization of plasma needles, to protect X-ray film, rations and bandages. And, of course, we still do our best to supply old customers in the food, drug, baking and other essential industries.

We haven't a pound to spare for the new customers we would like to serve, but we can furnish experimental samples for planning and testing. Why not find out what Diafane can do for your post-war packaging — now?

Photo courtesy of United States Plywood Corporation.

RIEGEL PAPER CORPORATION • 342 Madison Avenue, New York 17, N. Y.

Also sold by The Detroit Wax Paper Co., Waxide Paper Co., and Western Waxed Paper Co.

140

Riegel's Diafane

Photo courtesy Celanese Celluloid Corp.

Photo courtesy of Signal Corps, U. S. Army

The Gun is Always Dry
and ready for instant use

It was easy to keep a gun dry OR ready . . . but to keep it dry AND ready was a complicated problem. Requirements called for a bag or "envelope" of waterproof material that would resist tearing — would be light in weight, tough, transparent, extremely thin and *flexible,* and capable of being sealed permanently on the ends and two sides, and twisted *air-and-water-tight* at the open end.

Why? Because the fighting man must carry his gun safely through surf — must be able to locate and pull the trigger *through* the material, and shoot through the bag without danger. If he stumbles and falls, the gun floats and can be retrieved quickly — in fact, the gun so encased will aid in supporting his weight if he is wounded or steps into deep water.

American research developed a calendered vinyl based material expressly for this purpose . . . and the Kellogg Container Division of U. S. E. has already produced many thousands of these containers.

Knowledge of how to design and manufacture containers for all purposes, and *facilities* to produce them in line with your needs, can be of great assistance to you in your war and post-war packaging problems. Experience and facilities of the Kellogg Container Division of U. S. E. are at your service, *today.*

P-9

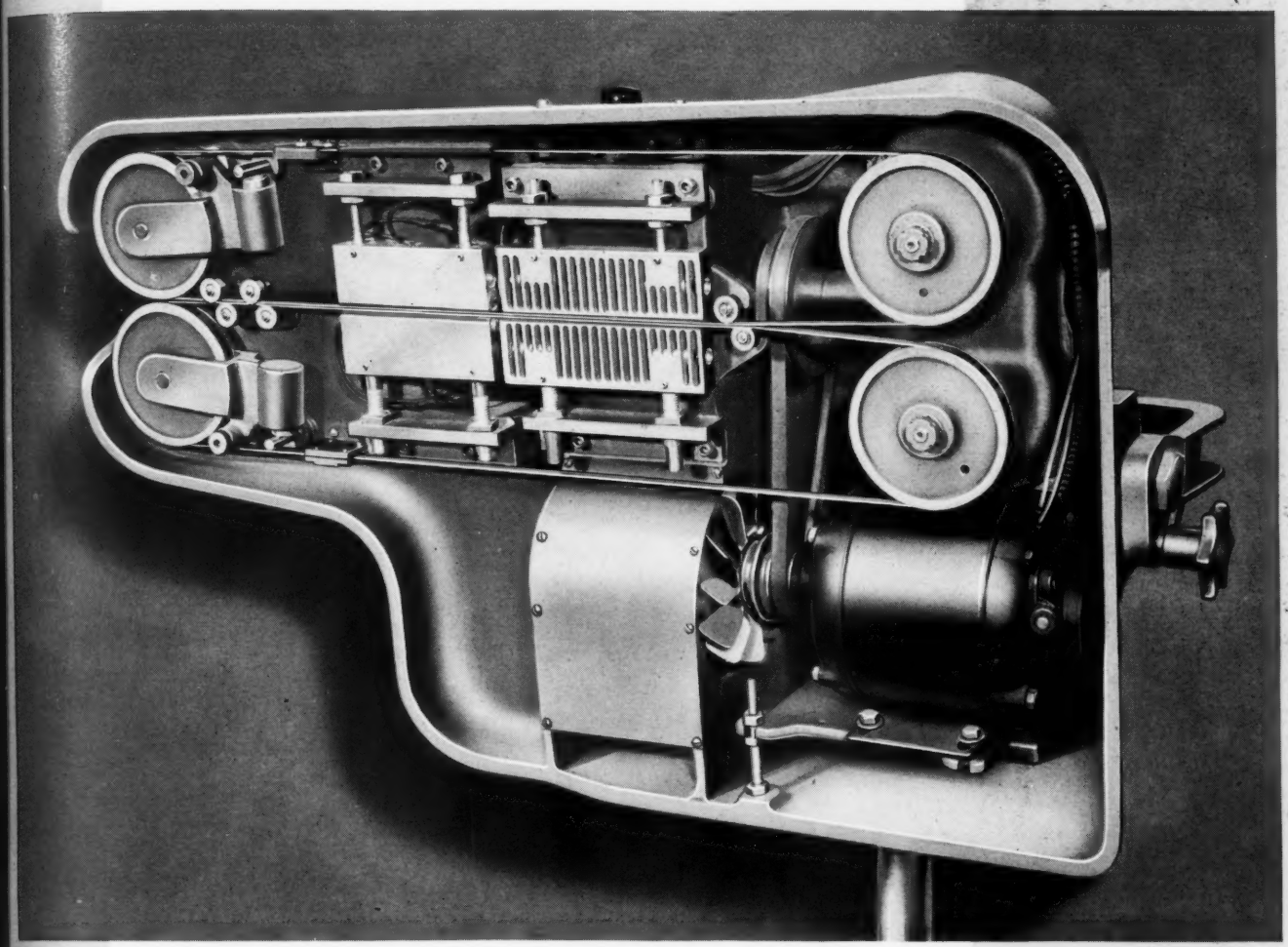
UNITED STATES ENVELOPE COMPANY
14 Divisions from Coast to Coast

U·S·E PROTECTIVE PACKAGING

Yes, Here Today!

Sav-Way

The first production model of the Sav-Way heat sealing machine, last word in flexible plastic packaging equipment!



THE manufacturers of plastic film and foil packaging materials and the packaging engineers who recently viewed the first production model of the Sav-Way heat sealing machine agreed that it was far ahead of its time. Yet, it is a practical reality, ready now for the protective packaging of critical war materials and your post war product.

The sealing function performed by the basic unit illustrated on these pages is adaptable to a wide range of materials and methods of application.

If you are a manufacturer of plastic film or foil packaging materials, our Research Department will be glad to work with you in developing techniques to meet the specific requirements of your materials.

Write, wire, or phone for samples of the Sara-Seal welded closure, and descriptive booklet explaining the Sara-Seal principle.

If you will enclose samples of your materials, we shall be glad to test them for sealing properties.

SAV-WAY INDUSTRIES

BOX 117, HARPER STATION, DETROIT 13, MICHIGAN

Sav-Way

Declare Your INDEPENDENCE!

INDIVIDUALIZE YOUR POST-WAR PRODUCT WITH SEFTON'S POST-WAR "Profit-Packaging!"

Give your post-war product a personality of its own with Sefton's "Profit Packaging." Their string-opening can is typical of their packages with specific utility values. It factory-seals your product and is absolutely tamper-proof!* This feature gives your customers added confidence in your product. It's another Sefton package that means profits for you!

*OTHER FEATURES:
It opens easily
It can be closed again
It has full opening for packing

SEFTON
FIBRE CAN COMPANY
ST. LOUIS ..... NEW ORLEANS

DISTRICT OFFICES: • Los Angeles • San Francisco • Denver • Tampa • Chicago • Des Moines • New Orleans • Boston • Detroit • Kansas City • St. Paul Omaha • New York • Cincinnatti • Cleveland • Oklahoma City • Pittsburgh • Memphis • Nashville • Dallas • Houston • Salt Lake City • Seattle

MEMO

Still up to our necks in war production, but —— there'll come a day!

KIMBLE VIALS. . . .

Light in Weight with Uniform Walls

Uniform wall thickness is a built-in characteristic of every light, attractive Kimble vial fabricated from machine-drawn Kimble glass tubing.

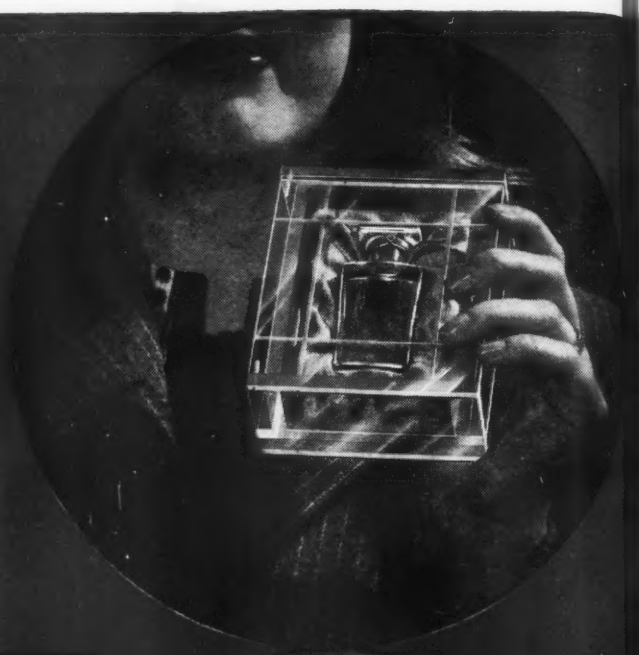
For Assurance

K KIMBLE GLASS

KIMBLE GLASS COMPANY . . . . VINELAND, N. J.

NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO

PROTECTION



SALES APPEAL

SECONDARY USE

Sales curves zoom upward when customers are exposed to merchandise packaged in handsome containers designed for secondary use. Such containers can be utilized for many household purposes long after the original contents are gone. Smart merchandisers appreciate this, realize the extra reason behind the buying interest—the same urge that prompts women to pull, push, and pummel at a bargain sale. Sales executives know that a shopper, seeking an exquisite bottle of perfume or fine toilet soap or any of a hundred products, chooses the one packaged in a beautiful container constructed to serve later as a handsome cigarette humidor or jewelry box or powder receptac.

Made of Ethocel Sheeting or Styron—outstanding Dow plastics—such boxes possess two additional virtues fundamental to good packaging . . . they protect the contents because they are strong, durable materials . . . they step up sales appeal because their clear transparency makes each package an individual showcase.

Dow technicians will be glad to talk over details of how Ethocel Sheeting and Styron can help *you* in postwar packaging plans—no obligation, of course.

GET ALL 3 WITH DOW PLASTICS

Ethocel Sheeting

PRESENT AND POTENTIAL USES:

Containers of all types, sizes, and shapes for jewelry, cosmetics, and other products. Also used for displays, advertising novelties, greeting cards, envelopes, labels, decalcomanias, records, electrical insulating tape, ice cube trays, lighting fixture covers, lamp shades, and similar products.

PROPERTIES:

Combines toughness with flexibility: tensile strength 10,000 lbs. per sq. in.; elongation, 30%; bursting strength (Mullen), 48; folding endurance (lkg; M.I.T.), 4000. Retains these characteristics and transparency over long periods despite handling. Resistant to alkalies and grease. Withstands heat to 220° F. continuous; to 275° F. intermittent. Resists cold. Easily fabricated by drawing, folding and scoring. Can be beaded, printed and joined by adhesives.

STYRON

PRESENT AND POTENTIAL USES:

Cosmetic and pharmaceutical boxes and containers of all types; funnels; bottles; closures; food handling equipment. Also used for other products, jewelry; advertising items; refrigerator parts; pens; pencils; chemical apparatus; lenses; decorative objects, trim and many other uses.

PROPERTIES:

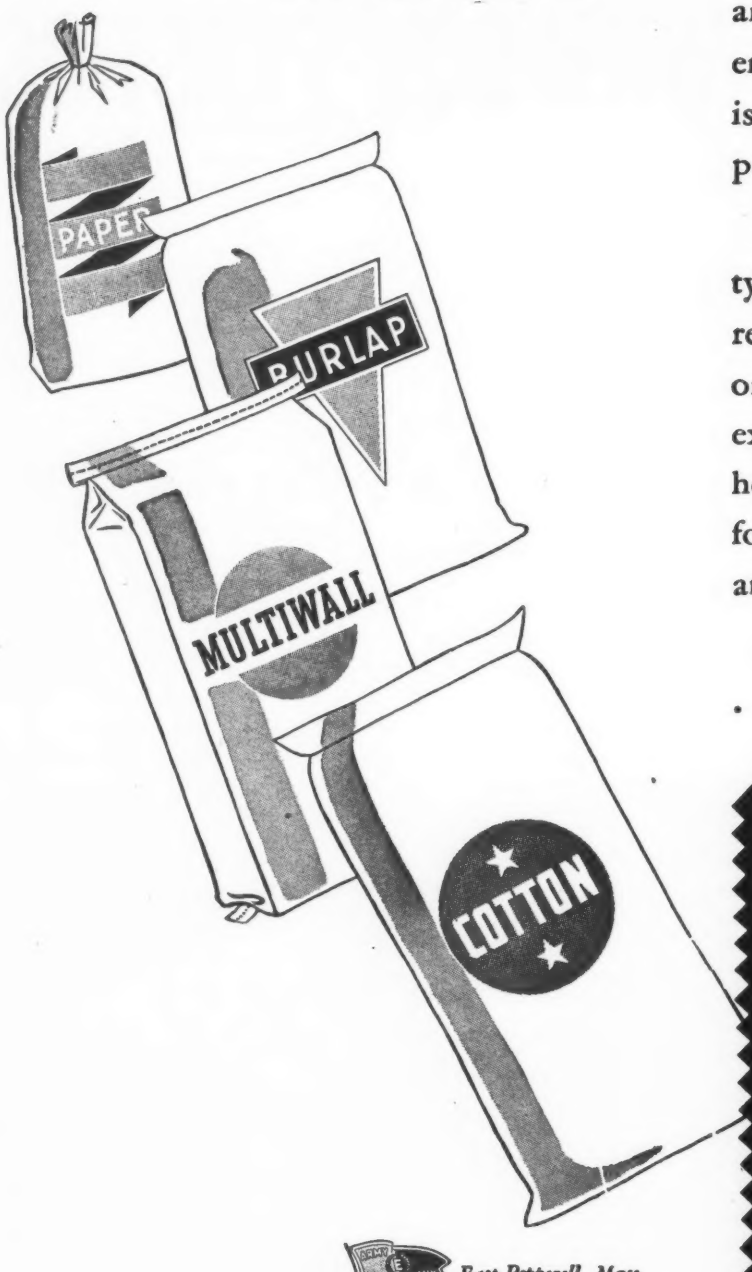
Beautiful, clear, translucent or opaque; resistant to acids and alkalies; stable at low temperatures; broad color range; low specific gravity providing more moldings per pound; low water absorption, good dimensional stability.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

Whatever's the BEST BAG FOR YOUR USE

. . . we make it!



WHEN you buy your bags from Bemis, among the important advantages you enjoy is this: You can buy whatever type is best for your particular use—cotton, paper, multiwall, burlap or waterproof.

Bemis is a leading producer of *all* types of bags and consequently has no reason to high-pressure you toward any one type. We have no favorites. If our experienced packaging specialists can help you to determine which is the best for your use, you may be sure that their analysis and advice will be unbiased.

Whatever's the *best bag for your use* . . . we make it.

BEMIS BAGS

BEMIS BRO. BAG CO.

OFFICES: • Baltimore • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Denver • Detroit • East Pepperell • Houston • Indianapolis • Kansas City • Los Angeles • Louisville • Memphis • Minneapolis • Mobile • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Peoria • St. Helens, Ore. • Salina • Salt Lake City • San Francisco • Seattle • Wichita • Wilmington, Calif.

BETTER BAGS SINCE 1858

ARMY NAVY E

East Pepperell, Mass.

HE LOOKS THROUGH ARMOR PLATE OF GLASS

A pilot of a big bomber needs clear, undistorted visibility. Today curved sections of glass are replacing plastic in bomber noses. This special glass is curved with virtually no distortion of vision, yet it will stop armor-piercing bullets up to 50 caliber.

We do not make this new miracle glass. Its manufacture is a highly specialized field. But we do believe that the spirit of progress which created this and other new forms of glass, will make for a brighter tomorrow for the entire glass industry.

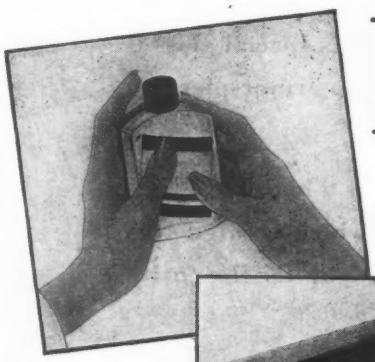
Here at Carr-Lowrey we have specialized since 1889 in the making of fine glass containers. This specialization has resulted in the production of *better* glass containers. Among users, Carr-Lowrey containers are known for their outstanding excellence.

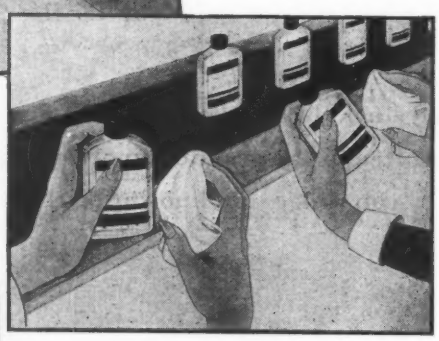
CARR-LOWREY GLASS CO.

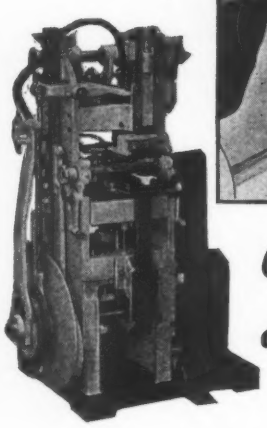
Factory and Main Office: Baltimore, Md.
New York Office: 500 Fifth Ave.
Chicago Office: 1502 Merchandise Mart

LABELING

THAT NEEDS *no* "HAND FINISHING"







NO high-priced hands or nimble fingers are needed for repositioning, or for wiping-off excess glue—**when you use a Labelrite.** You get **automatically,** perfect register, over-all **smooth** adhesion of labels without a trace of excess glue, when you use

PONY LABELRITE

★

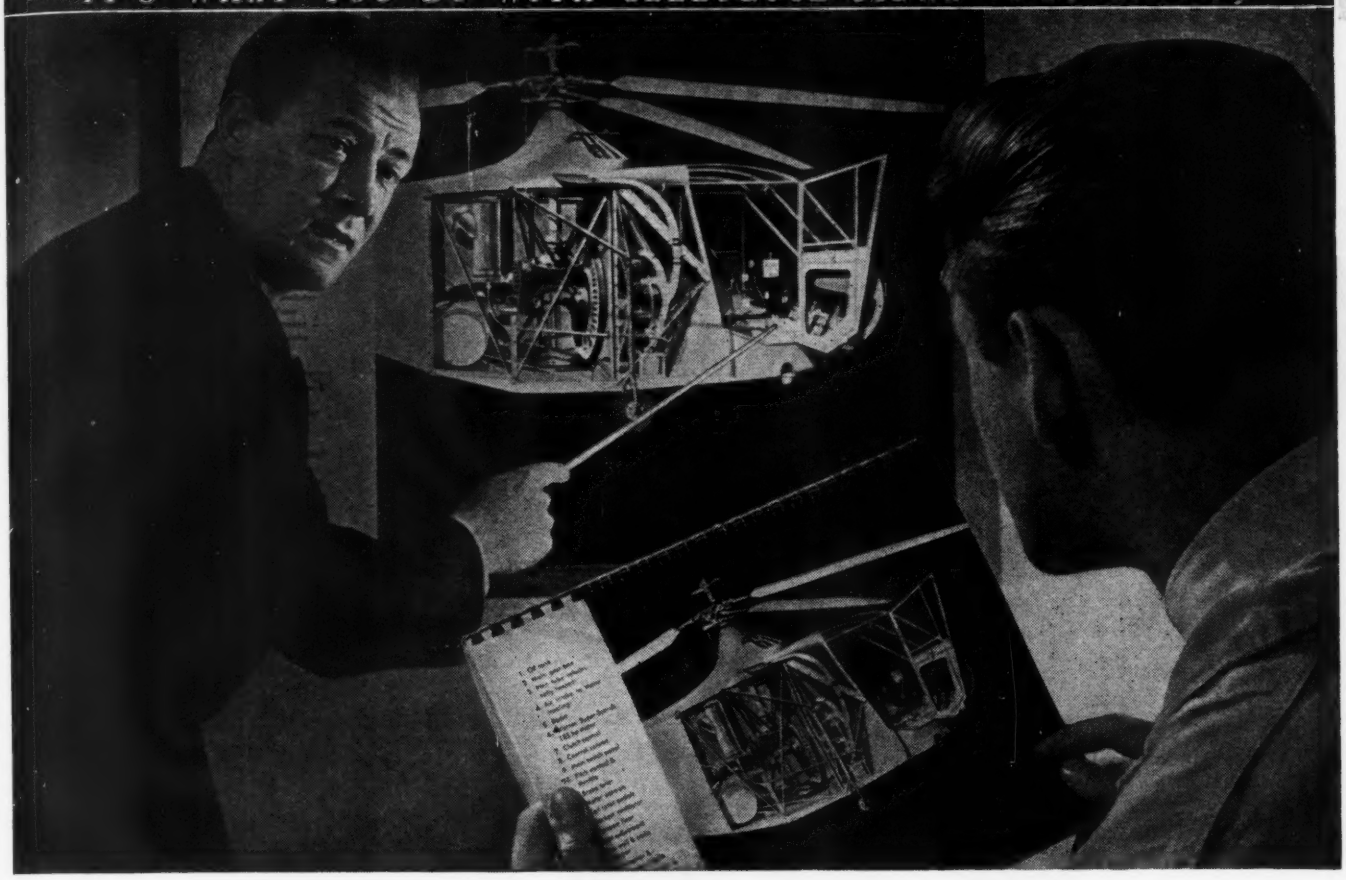
Get FACTS— and you'll get Labelrites!

These are "built-in" features of the Labelrite. Other, **extra** advantages to the owners, are the self-cleaning feature; petty-cash cost of change parts to handle varying sizes with change-over time, a matter of minutes. You save **more** time and **more** money, with less fuss by using Labelrites!

NEW JERSEY MACHINE CORPORATION

1600 Willow Avenue — Chicago Office: 325 W. Huron Street — Cincinnati Office: 1701 Carew Tower — Hoboken, N. J.

IT'S WHAT YOU DO WITH CELLULOSE FIBRE THAT COUNTS



Good Schooling for Peace, too

War isn't all boom and blast. Some of it is constructive information and instruction, of value in peace too.

For example—the modern printed instruction books and guides, used in training our armed forces, deal with subjects such as aviation, navigation, mechanics, engineering and electronics.

Thus the Army and Navy have found paper and printing invaluable in giving a quick, clear understanding of a subject.

In the civilian economy of tomorrow there will be vast need of modern brochures, booklets, folders and catalogs—to interest and convince prospective dealers and consumers—to illuminate fine sales points of post-war products—to create new markets and revive old ones.

To help meet wartime needs for many kinds of papers, Oxford has combined continuous research with the experience gained in making more than 1,000 miles of fine printing paper every day. This combination has given us an unusual fund of knowledge to apply to printing problems. And it will prove to be equally useful to all users of fine printing in the fruitful years ahead.

Included in Oxford's line of quality printing and label papers are: Enamel-coated *—Polar Superfine, Mainefold, White Seal, Rumford Enamel and Rumford Litho C1S;* Uncoated*—Engravatone, Carfax, Aquaset Offset, Duplex Label and Oxford Super, English Finish and Antique.*

OXFORD PAPERS

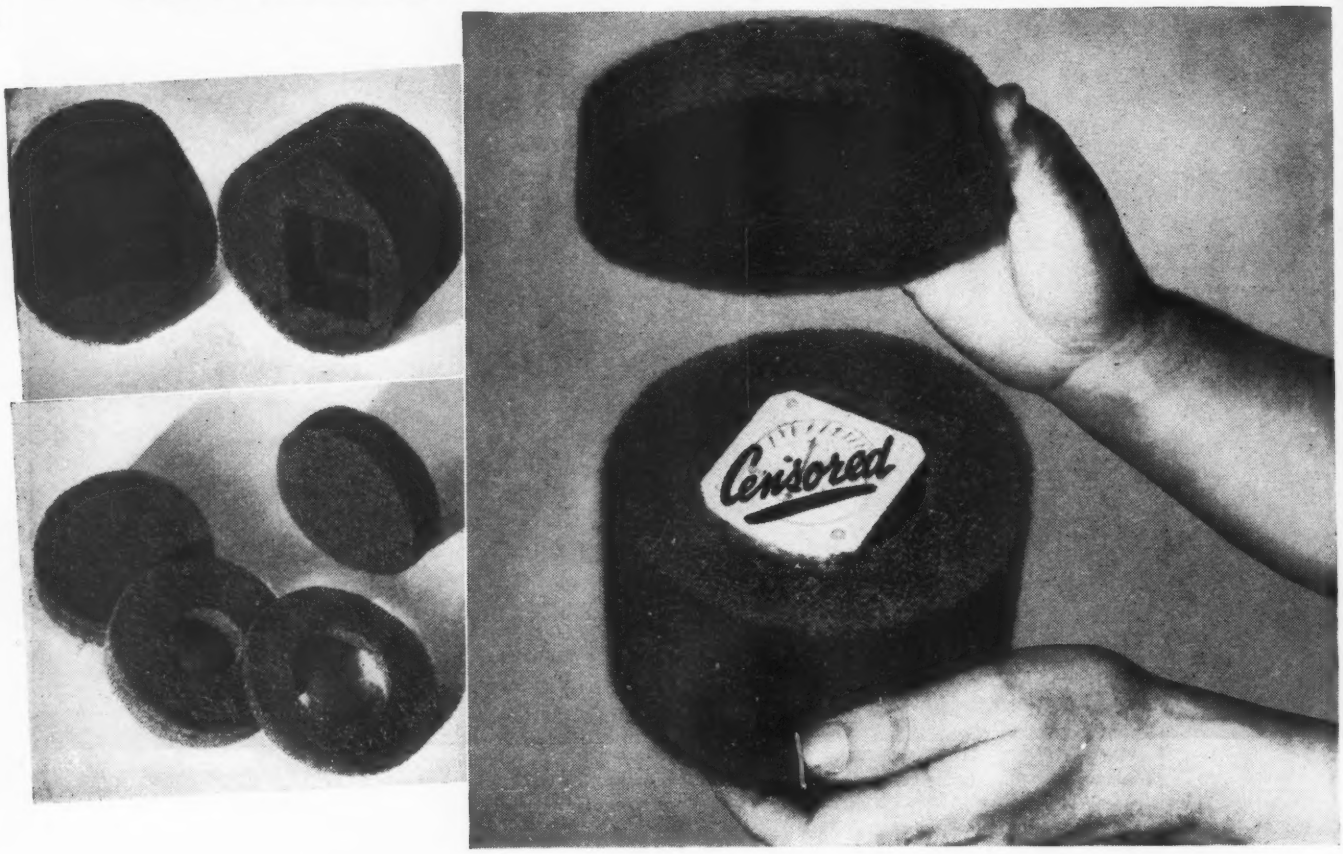
OXFORD PAPER COMPANY

230 Park Avenue, New York 17, N.Y.

MILLS at Rumford, Maine and West Carrollton, Ohio

WESTERN SALES OFFICE: 35 East Wacker Drive, Chicago 1, Ill.

INEXPERIENCED WORKERS PACK DELICATE INSTRUMENT FOR 7500-MILE TRIP



Unique Rubberized Material Offers Pre-Tailored Protection for Fragile Products

There is no other packaging, cushioning or space-filling material quite like Texlock* for protecting delicate instruments against damage in transit. Regardless of distance, climatic changes or rough handling, it retains its resilience and will not become brittle, absorb moisture, bunch up or shift about.

Extremely light in weight, yet tough, can be used repeatedly, delivering new and returning war-damaged instruments or parts to the manufacturer. Normal damage to outside container is not transmitted through Texlock to device it is designed to protect.

Whatever your problem, this amazing new rubberized material can be correctly designed and molded or die-cut to order – ready to receive any size, shape or weight article and fit into any case or container.

Our rubberized curled hair and bonded fiber products are serving in a host of ways in planes, tanks, ships, as well as for conveying delicate parts all over the world right now. It is a successful material that can serve you dependably!

**Trade Mark*

Sponge Rubber Products Co.

213 Derby Place, Shelton, Conn. • Plants in Derby and Shelton, Conn.

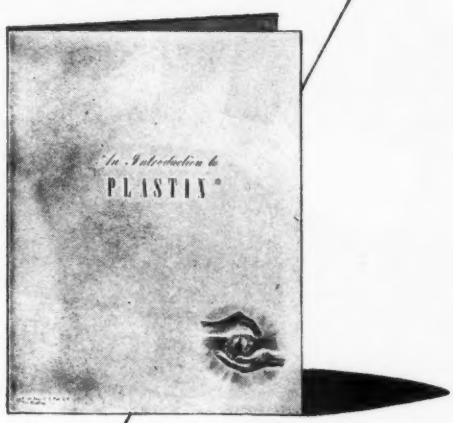
Sales Offices: **New York • Chicago • Washington • Detroit**

WORLD'S LARGEST MANUFACTURERS OF CELLULAR RUBBER AND BONDED FIBRE PRODUCTS

PLASTIN*

VINYL-ALUMINUM

MOISTURE-VAPOR BARRIER



PRODUCTION OF PLASTIN **is currently devoted to filling the unprecedented military demands for this unprecedented moisture-vapor barrier, which surpasses all Type I barrier requirements for maximum load limits under Method II packaging.**

The time will come—perhaps very soon—when Plastin can fill *your* needs for positive protection against corrosion. Samples adequate for introductory and testing purposes are now available. Learn why Plastin is preferred to any other moisture-vapor barrier heretofore known. Send for folder containing description and small samples of Plastin.

PLASTIC FILM CORPORATION

PHONE: LEXINGTON 2-5450 • 475 FIFTH AVE., NEW YORK 17, N.Y.

*Patents Pending
Trade Mark Reg. U.S. Pat. Off.

FILL OUT AND MAIL TODAY!

PLASTIC FILM CORPORATION
475 Fifth Avenue
New York 17, New York

Gentlemen:

Please send a free copy of "An Introduction to Plastin" to:

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

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P
(
N

BUSINESS REPLY CARD

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

2c.-POSTAGE WILL BE PAID B

PLASTIC FILM CORPORAT
475 FIFTH AVENUE
NEW YORK 17, N

PLASTIN*

VINYL-ALUMINUM

MOISTURE-VAPOR BARRIER

PRODUCTION OF PLASTIN **is currently devoted to filling the unprecedented military demands for this unprecedented moisture-vapor barrier, which surpasses all Type I barrier requirements for maximum load limits under Method II packaging.**

The time will come—perhaps very soon—when Plastin can fill *your* needs for positive protection against corrosion. Samples adequate for introductory and testing purposes are now available. Learn why Plastin is preferred to any other moisture-vapor barrier heretofore known. Send for folder containing description and small samples of Plastin.

PLASTIC FILM CORPORATION

PHONE: LEXINGTON 2-5458 • 475 FIFTH AVE., NEW YORK 17, N.Y.

FIRST CLASS
PERMIT NO. 44912
(SEC. 510, P. L. & R.)
NEW YORK, N.Y.

AID BY—

ORPORATION
VENUE
RK 17, N. Y.

PLASTIC FILM CORPORATION
475 Fifth Avenue
New York 17, New York

Gentlemen:

Please send a free copy of "An Introduction to Plastin" to:

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

nothing up our sleeves

RotograVure

ON CELLOPHANE FOIL, GLASSINE OR PAPER

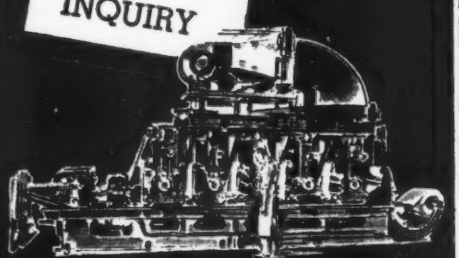
AT 300 FEET PER MINUTE

PRINTS 5 OR MORE COLORS

WE INVITE INQUIRY

FOR LABELS WRAPPERS CARTONS, etc.

DELIVERS IN SHEETS OR ROLLS



Champlain COMPANY, INC.

SUBSIDIARY OF THE FRED GOAT CO., INC., EST. 1893

636 ELEVENTH AVENUE, NEW YORK 19, N. Y.

This paper can is being successfully used commercially as a two in one sales package and sprayer for insecticides and many other non-abrasive powders.*

For 25 years R. C. Can has pioneered in the development of paper cans for all purposes. Now our productive capacity cannot handle the new containers but our drawing boards are available to all firms interested in the use of paper cans in their post war plans.

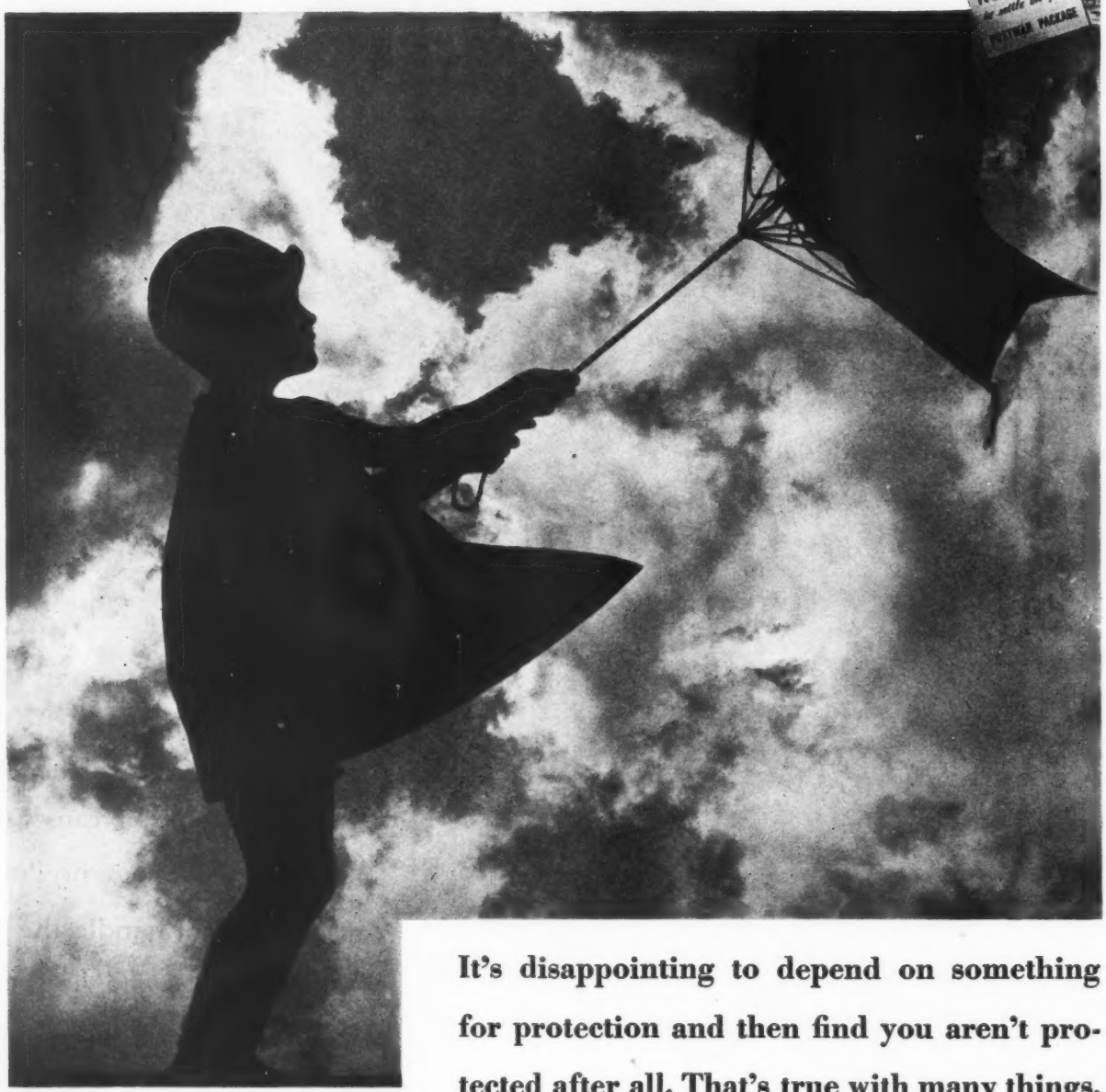
R.C. CAN COMPANY

Manufacturers of fibre cans, tubes, spools and cores
Head Office: St. Louis, Mo.
Branch Factories: Arlington, Texas; Rittman, Ohio; and Kansas City, Mo.
Sales Offices: Minneapolis, New Orleans, Atlanta, Memphis, Milwaukee, Louisville, New York, Pittsburgh, Denver and Los Angeles.

R.C. CAN CO. THE STAMP OF QUALITY ST. LOUIS, MO.

*Patented R. C. Can Company

SPEAKING OF *Protection*



"FLAV-O-TAINER"

will later be available in the following Royalflex films:

Selloflex (Cellophane laminated to itself or to other material)

Lumiflex (aluminum foil laminated to other material)

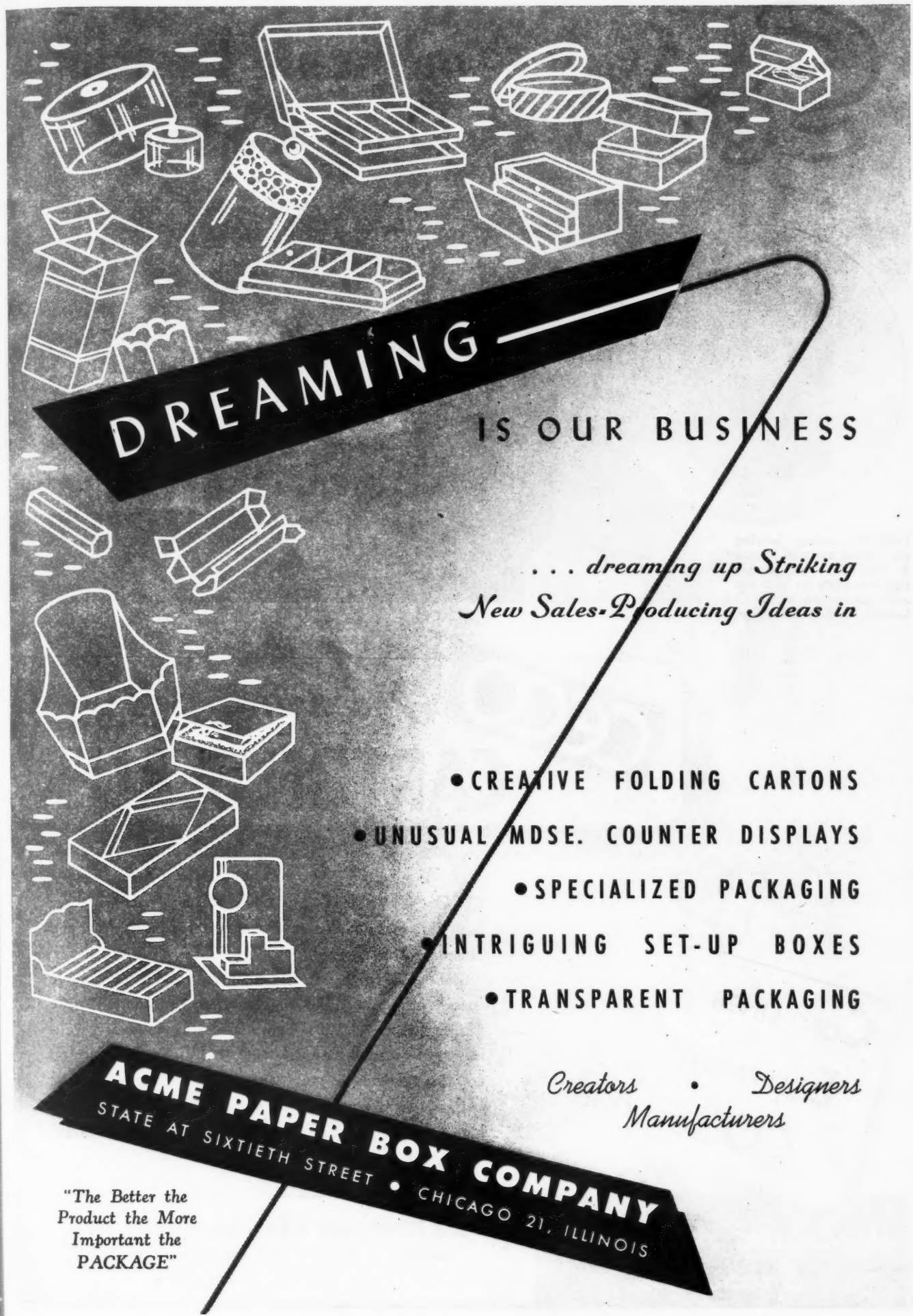
Plioflex (pliofilm laminated to itself or to other material)

Duoflex (moisture-proof coated glassine laminated to itself)

It's disappointing to depend on something for protection and then find you aren't protected after all. That's true with many things, particularly packaging. And that is one good reason why so many manufacturers depend on FLAV-O-TAINER, the patented duplex bag, heat sealed on all seams, *that assures complete protection against air, moisture, grease and odors.*

THOMAS M. ROYAL & COMPANY • *Philadelphia 20*

BOSTON • CHICAGO • SAN FRANCISCO • BEAUMONT • ATLANTA • PITTSBURGH • NEW ORLEANS
DENVER • SEATTLE • NEW YORK • ST. LOUIS • DAYTON • DETROIT • SYRACUSE • BRYN MAWR


DREAMING
IS OUR BUSINESS
. . . dreaming up Striking
New Sales-Producing Ideas in
• CREATIVE FOLDING CARTONS
• UNUSUAL MDSE. COUNTER DISPLAYS
• SPECIALIZED PACKAGING
• INTRIGUING SET-UP BOXES
• TRANSPARENT PACKAGING
Creators • Designers
Manufacturers
ACME PAPER BOX COMPANY
STATE AT SIXTIETH STREET • CHICAGO 21, ILLINOIS
"The Better the Product the More Important the PACKAGE"

Seals America's Leading Drug Cartons

Penicillin cartons bearing the famous name of Merck & Co., Inc., are sealed simultaneously on both top and bottom on a CECO Carton Sealing Machine.

CECO Adjustable CARTON SEALER

CECO Adjustable Carton Glue Sealing Machines have long been a standby in America's foremost drug and pharmaceutical houses.

The wide range of adjustability, flexibility, variable speed, portability, and simplicity of construction make CECO Model A3901–1 indispensable to every well-managed packaging department. Fully automatic models are also available to meet large production requirements.

Let us send you facts and figures about these low-cost, high-performance CECO Adjustable Carton Sealers. Write, wire or phone today.

CONTAINER EQUIPMENT CORPORATION

Packaging Machinery Specialists

212 Riverside Ave., Newark 4, N. J.

CHICAGO • TORONTO • BALTIMORE • ST. LOUIS
SAN FRANCISCO • ROCHESTER

CUSTOM-BUILT *for* SAVINGS

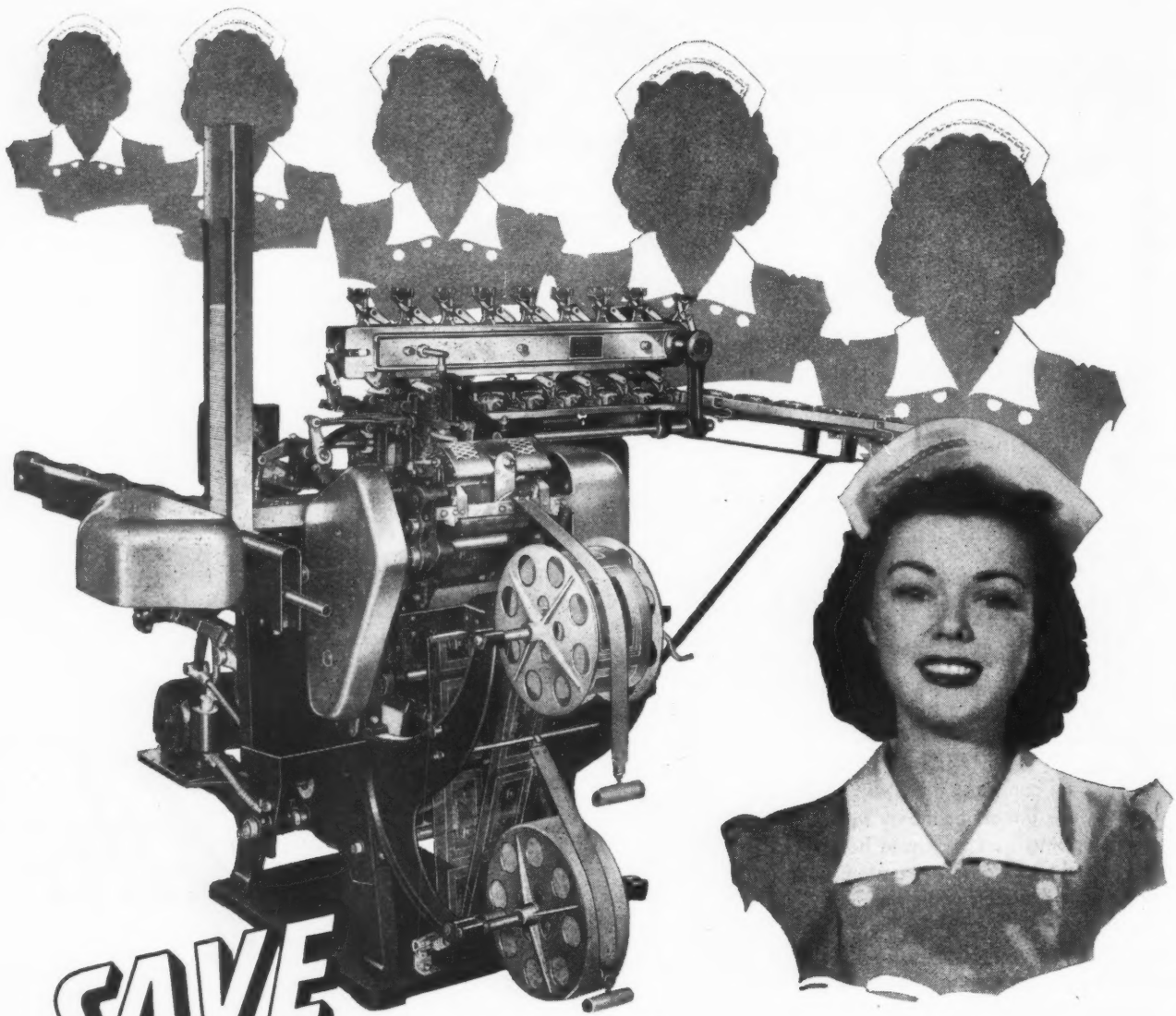
You can bank on set-up paper boxes to ensure utmost economy in packing and shipping . . . for these handsome, sturdy containers — custom-built to protect your products while enhancing their display value—make possible speedier assembly-line packaging. And because they're remarkably light in weight, they pare shipping tariffs. You'll find it profitable to have a set-up paper box custom-built to your special requirements.

BACK THE [illegible] SEVENTH WAR LOAN. [illegible] — and HOLD — YOUR INV[illegible]MENT IN THE FUTURE. *7th!*

NATIONAL PAPER BOX MANUFACTURERS *Association*

LIBERTY TRUST BUILDING, PHILADELPHIA 7, PENNSYLVANIA

FOR INFORMATION OR SERVICE • CONSULT THE NEAREST SET-UP BOX MANUFACTURER



SAVE OVER 75% IN WRAPPING LABOR!

That's real packaging economy—for in many prominent candy manufacturing plants and bakeries, using Wrap-O-Matic, 5 out of every 6 girls on the packing line are now only shadows of the past . . . a savings of over 75% in Wrapping labor costs. Wrap-O-Matic also saves up to 35% in Wrapping material costs . . . operates at high speed (up to 120 units per minute) using any type wrapper that can be printed in rolls, and gives extra sales appeal to your product. Shape and texture are no obstacle, for Wrap-O-Matic wraps soft or irregular shaped bars and biscuits with ease.

Plan now to streamline your wrapping operations. Write for our new illustrated brochure and more complete details.

For wrapping candy bars, biscuits, and cookies, Wrap-O-Matic is the most popular Wrapping machine in the Confectionery and Bakery field . . . a real tribute to the flawless wrapping by Wrap-O-Matic.

WRAP-O-MATIC Lynch DIVISION

Manufacturing Corporation, Defiance, Ohio U. S. A.

For Water Resistance, Better Finish and Printability . . .

Package with Wax-Sized Paperboard!

● Are you looking for a packaging material that gives you superior water-shed properties and excellent finish and printing characteristics?

You'll find it in paperboard that has been top-sized with S/V Ceremuls (wax emulsions).

These high-quality, yet economical materials already are meeting many packaging needs, such as cigarette cartons, tag stocks, candy cups, Kraft bags, flour bags, soft drink carriers, flower boxes, etc. And the list is still growing.

Here are the reasons: Wax emulsion imparts water resistance and scuff resistance to paperboard. It lays surface fuzz, improves finish and printability.

Get full details on all of the advantages of wax-treated paperboard from your Socony-Vacuum Representative. Then, specify this type of paperboard for your packaging.

CALL IN SOCONY-VACUUM PROCESS PRODUCTS RESEARCH AND SERVICE

SOCONY-VACUUM OIL CO., INC.

26 BROADWAY, NEW YORK 4, N. Y.

Process Products
SOCONY-VACUUM

Standard Oil of N. Y. Div.
White Star Div. • Lubrite Div.
Chicago Div. • White Eagle Div
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Petroleum Co. • General
Petroleum Corp. of California

ALL DRESSED UP

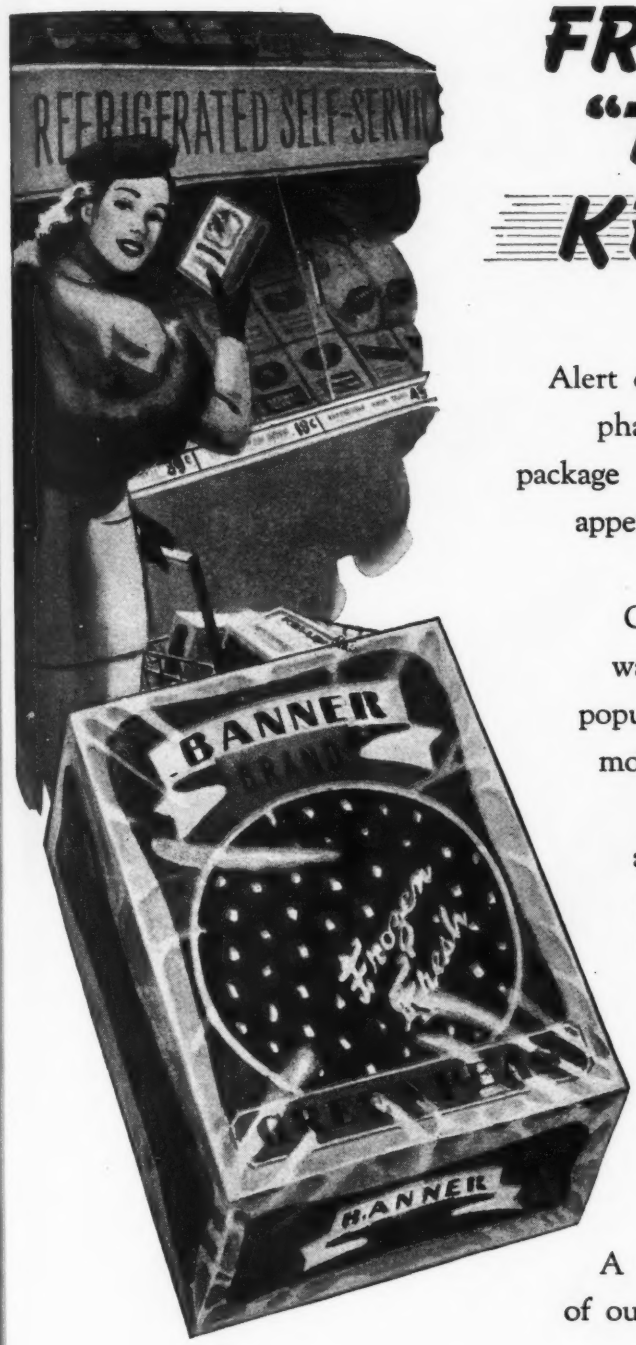
. . . AND GOING PLACES

The entire Mott's line of famous products now appears with newly designed labels. The family appearance created by these new labels helps one product identify the others and makes customer recognition easy.

A prominent member of this family is Mott's Pure Cider Vinegar. Always a favorite, this product of Duffy-Mott Company, Inc., 370 Lexington Ave., N. Y., is going places in its new dress.

The closure that so effectively carries out the Mott pattern of product identification is a Crown Screw Cap, attractively lithographed in colors to match the label. This trim, handsome cap does more than enhance the appearance of the package. Crown Screw Caps give double sealing pressure with the same amount of application force because of an exclusive Crown feature, the patented Deep Hook Thread. Crown Cork & Seal Company, Baltimore 3, Maryland. *World's largest makers of metal closures.*

CROWN CLOSURES



FROZEN FOODS IN "TRACO" WRAPS KEEP MOVING

Alert dealers are quick to give attractive TRACO cellophane packages preferred counter display . . . Your package is easily accessible to customers . . . Eye and appetite appeal stimulate impulse buying, and your product *keeps moving* over the dealer's counter. Cellophane was the preferred packaging before the war. As the supply available increases, Cellophane's popularity for packaging frozen foods will continue to mount. It is the dependable moisture-proof wrapper, it insures cleanliness and full product protection, and is adaptable for automatic wrapping machines in printed sheets or rolls.

Use TRACO wraps for

Frozen Meats • Frozen Vegetables
Frozen Fish • Frozen Poultry
Frozen Fruits and Berries
Pre-cooked Frozen Foods
Ice Cream and Puddings

A card or the coupon below will bring you the aid of our technicians in solving your packaging problems.

TRAVER CORPORATION

Dept. MP75 • 358-368 West Ontario Street • Chicago 10, Illinois

CLIP, ATTACH TO YOUR LETTERHEAD AND MAIL TODAY

☐ Kindly send samples of TRACO wraps for commercial pack purposes.

☐ We will welcome a visit from one of your technicians to discuss our packaging problems.

Name

Title

MP-75

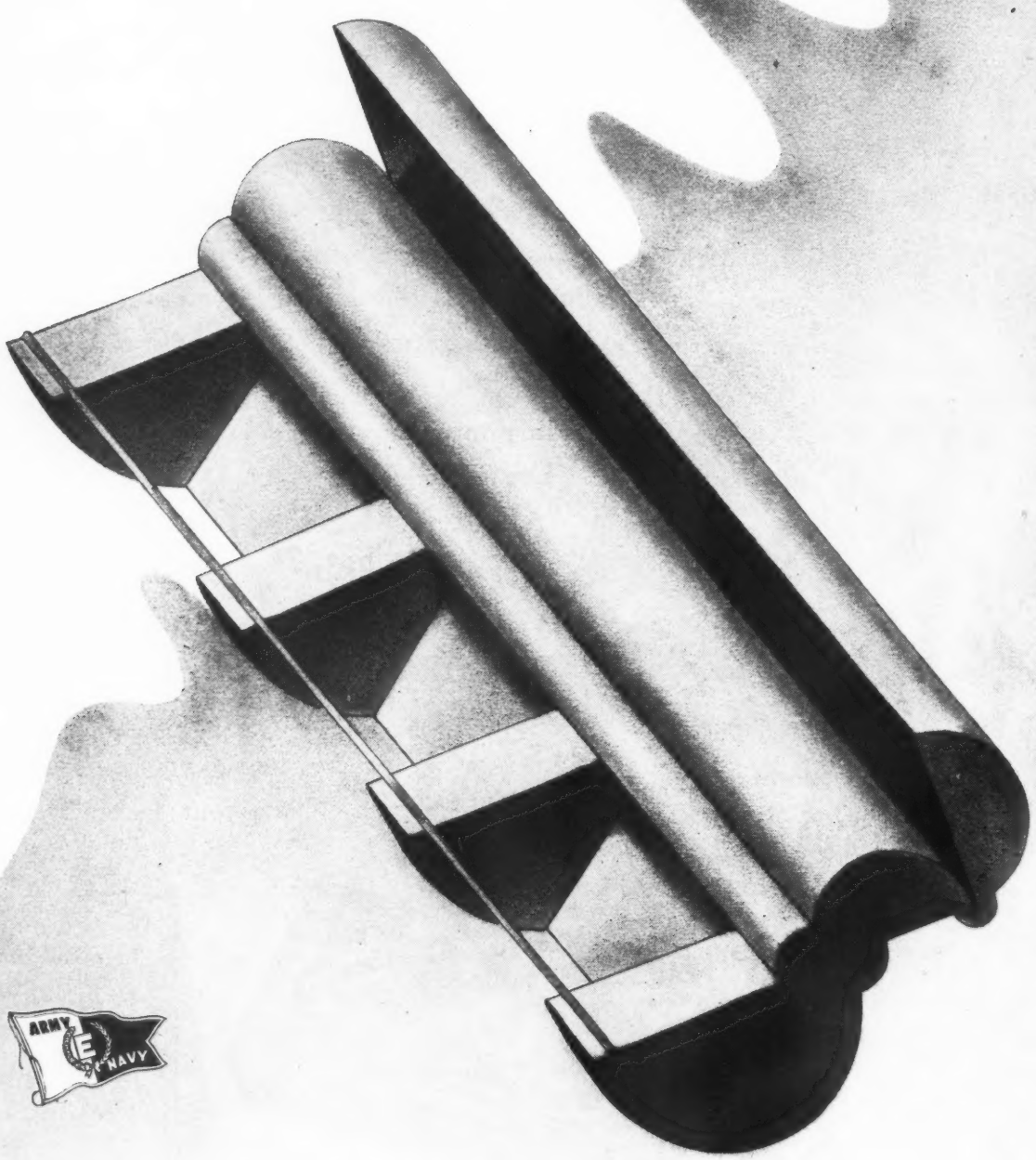
Post-War Trends in

Metal PRESENTATION BOXES

for the Jewelry and Pen and Pencil

trade will be as unusual as this abstract

ESTABLISHED 1876

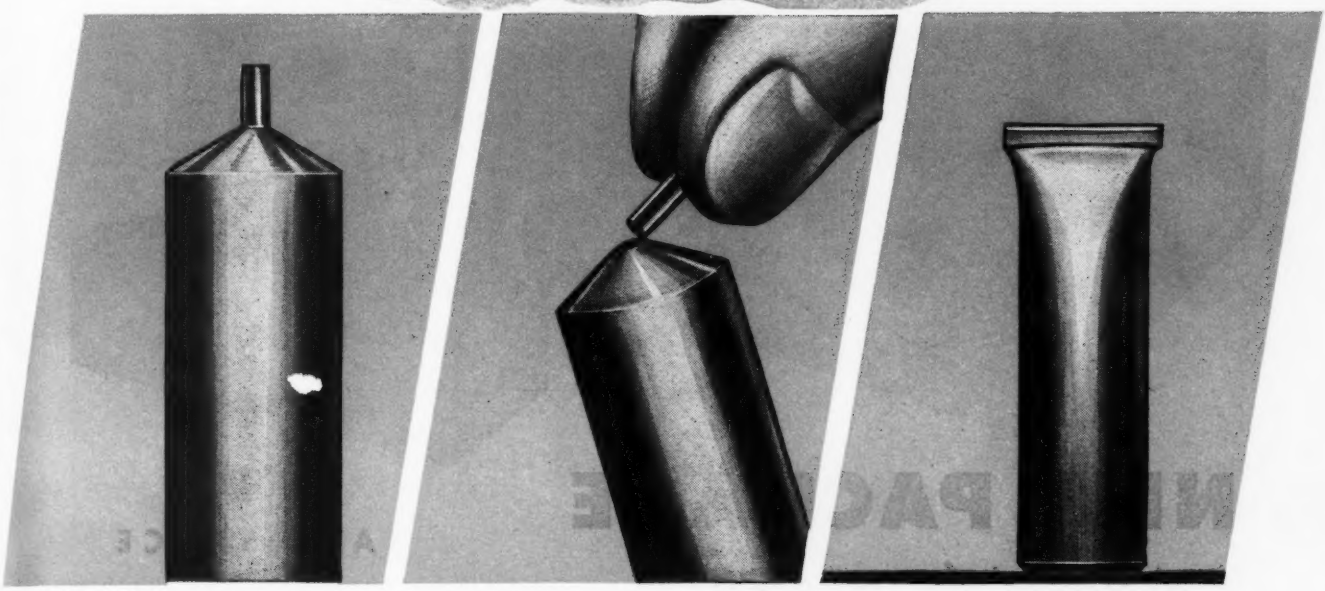


ARMY E NAVY

F. H. NOBLE & COMPANY 559 West 59th Street Chicago 21, Illinois

WIRZ *Mono-Pak* REG. U. S. PAT. OFF.

SINGLE-USE TUBE — IDEAL SAMPLING AND DISPENSING UNIT FOR YOUR PEACE-TIME PRODUCTS



Easy to open — easy to use — safeguards flavor, consistency — assures exact dosage

Individual portions of coffee, dehydrated soups, juices, pastes, hydroscopic powders and granular products, ointments, and toilet preparations will be more acceptable to your Peace-time markets in sanitary, convenient WIRZ Mono-Pak single-use collapsible metal tubes. Hermetically sealed, non-refillable, economical, WIRZ Mono-Pak Tube preserves your product's original freshness, purity, consistency, flavor, or scent. Prevents substitution, dispenses exact quantity. Product reaches your customer in perfect condition. Easy to open, easy to use, WIRZ Mono-Pak Tube can be attractively decorated, but requires no labeling or capping. This unusual merchandising tube for liquids, pastes and powders should be in your Peace-time packaging and sampling plans.

While all our tube production today is going to war, we shall be glad to help with these plans. All WIRZ Tubes are practical in different sizes for a variety of products . . . with suitable linings to combat corrosion and seepage count on WIRZ Tubes to protect your product, your brand name and your markets.

Give an extra push now — buy more War Bonds

A. H. WIRZ, INC.

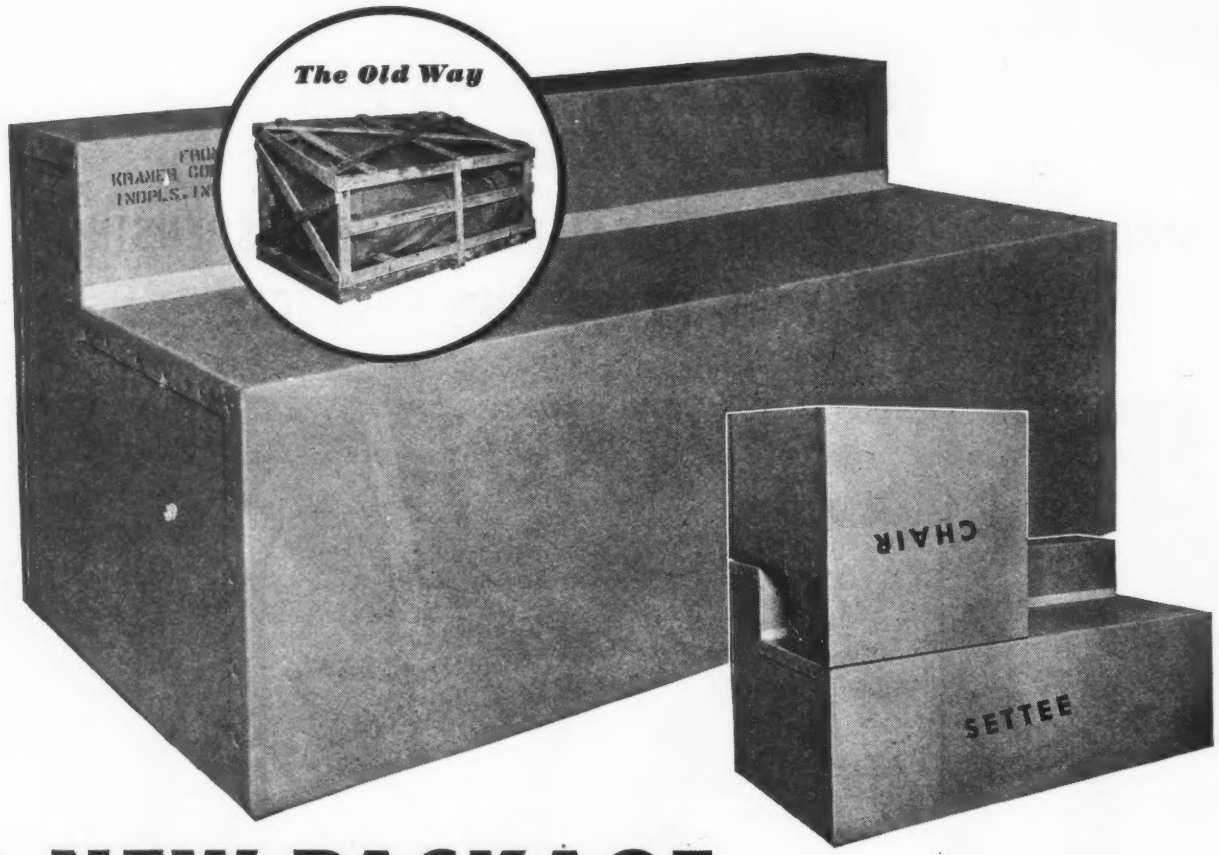
Fourth & Cole Sts.
CHESTER, PA.

Established 1836

COLLAPSIBLE METAL TUBES • LACQUER LININGS • WAX LININGS • WESTITE CLOSURES • METAL SPRINKLER TOPS • HOUSEHOLD CAN SPOUTS • COMPRESSION MOLDING

New York 17, N. Y. 30 E. 42nd St. — Chicago 4, Ill. 80 E. Jackson Blvd. — Memphis 2, Tenn. Wurzburg Bros. — Havana, Cuba Roberto Ortiz Planos

A. G. Spilker { Los Angeles 14, Calif., 1709 W. 8th St. (Exposition 0178)—Also Danville, Calif.



A NEW PACKAGE

designed by INLAND

● In the furniture industry, the "packaging" of overstuffed suites has always presented a real problem. Inland engineers have solved this problem, as shown in the illustrations above.

The new Inland package for overstuffed furniture gives greater protection, costs substantially less than the old methods of crating for shipment. The package is neater. Saves time and labor cost in packing. The Inland "package" reduces freight costs—it is much lighter in weight.

SAVE SPACE

Among the many advantages of the Inland "package" for overstuffed suites is the design which permits them to be nested—one on top of the other. The illustration above shows a chair (upside down) stacked on a settee. Two chairs could be stacked together equally well—or two settees.

This new INLAND design gives maximum protection, and saves space during transit or in storage.

INLAND CONTAINER CORPORATION

INLAND

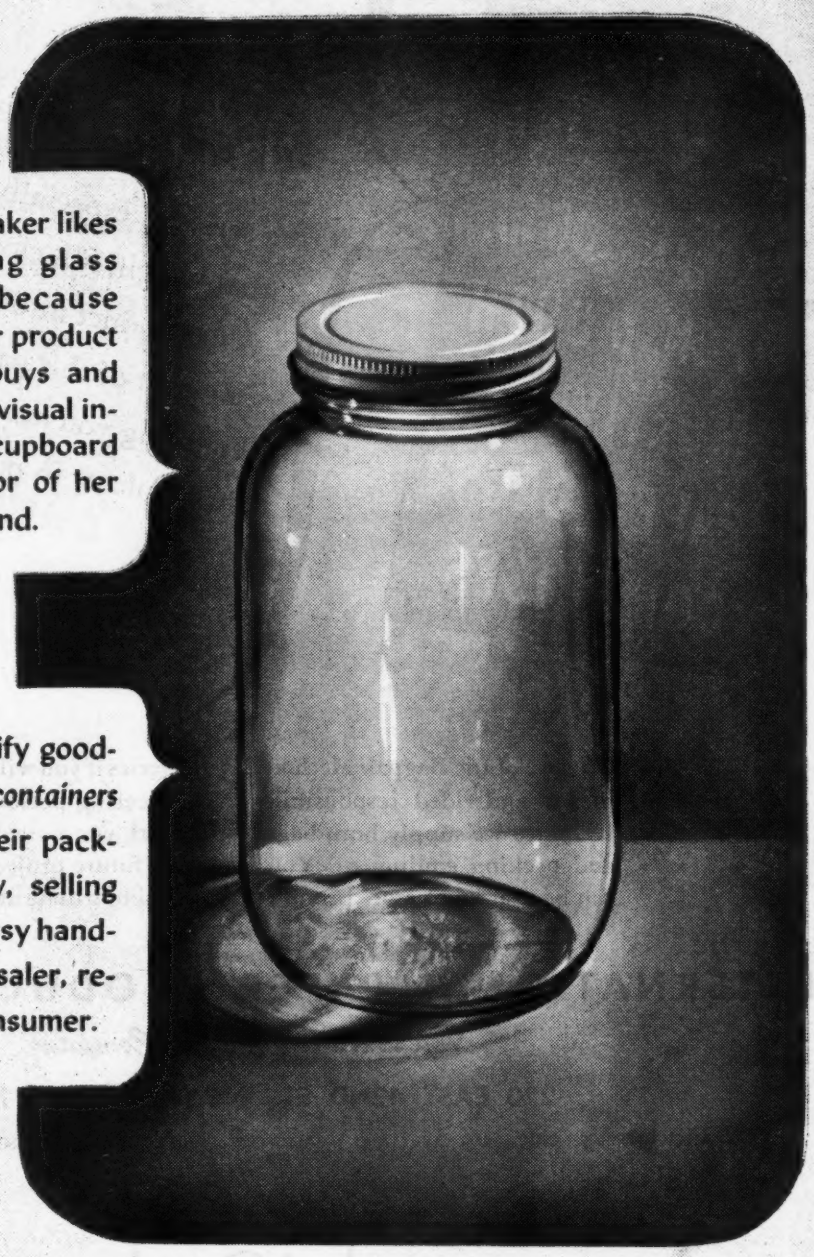
CORRUGATED FIBRE BOXES

INDIANAPOLIS, IND. • MIDDLETOWN, OHIO • EVANSVILLE, IND. • MILWAUKFE, WIS. • DETROIT, MICH.

POINT OF VIEW

Mrs. Homemaker likes good-looking glass containers because she sees your product before she buys and always has a visual inventory in cupboard or refrigerator of her supply on hand.

Packers specify good-looking H-A *containers* because of their packing efficiency, selling design and easy handling by wholesaler, retailer and consumer.



HAZEL-ATLAS GLASS COMPANY

Wheeling, W. Va.

THE BAGPAK METHOD FOR PACKING 25 lb. to 100 lb. OPEN MOUTH MULTIWALL PAPER BAGS COMPRISES

Tough, strong, sift-proof, moisture-proof, paper bags,

and

"BAGPAKERS"—

a series of especially designed machines that weigh, fill, close and seal your product into the bag, or perform any part of this packing cycle—thus enabling you to adopt the Bagpak Method in whole or in part.

The use of the Bagpak Method means undivided responsibility, since we supply both bags and packing equipment. You can be assured of more prompt deliveries if you will permit our Engineering personnel to confer with you *now* on any present or future project. Inquiries given immediate attention.

INTERNATIONAL PAPER PRODUCTS DIVISION

International Paper Company

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Agents for

Bagpak, Incorporated

George & Sherrard Paper Company

ALL-WEATHER KRAFT BAGPAK

* *Trade Mark reg. U. S. Pat. Off.*

KRAFT GATOR HIDE GATOR HIDE

George & Sherrard Paper Co.

ONE-MAN PACKAGE EASY TO HANDLE

FIDEL-I-TONE is a new technique of high fidelity color reproduction. It meets the growing need for better and *more persuasive* pictures on packages . . . particularly where modern color photography is used in the package design.

Developed expressly for quality reproduction on any type of printing surface, FIDEL-I-TONE gives delicate and faithful results on paper and boxboard alike . . . coated or uncoated.

So faithfully does FIDEL-I-TONE reproduce each subtle quality of the illustration, so brilliant and compelling the colors, it opens up new possibilities for increasing the sales appeal of the package. In making plans for your future packaging, you can't afford to overlook the important advantages of FIDEL-I-TONE.

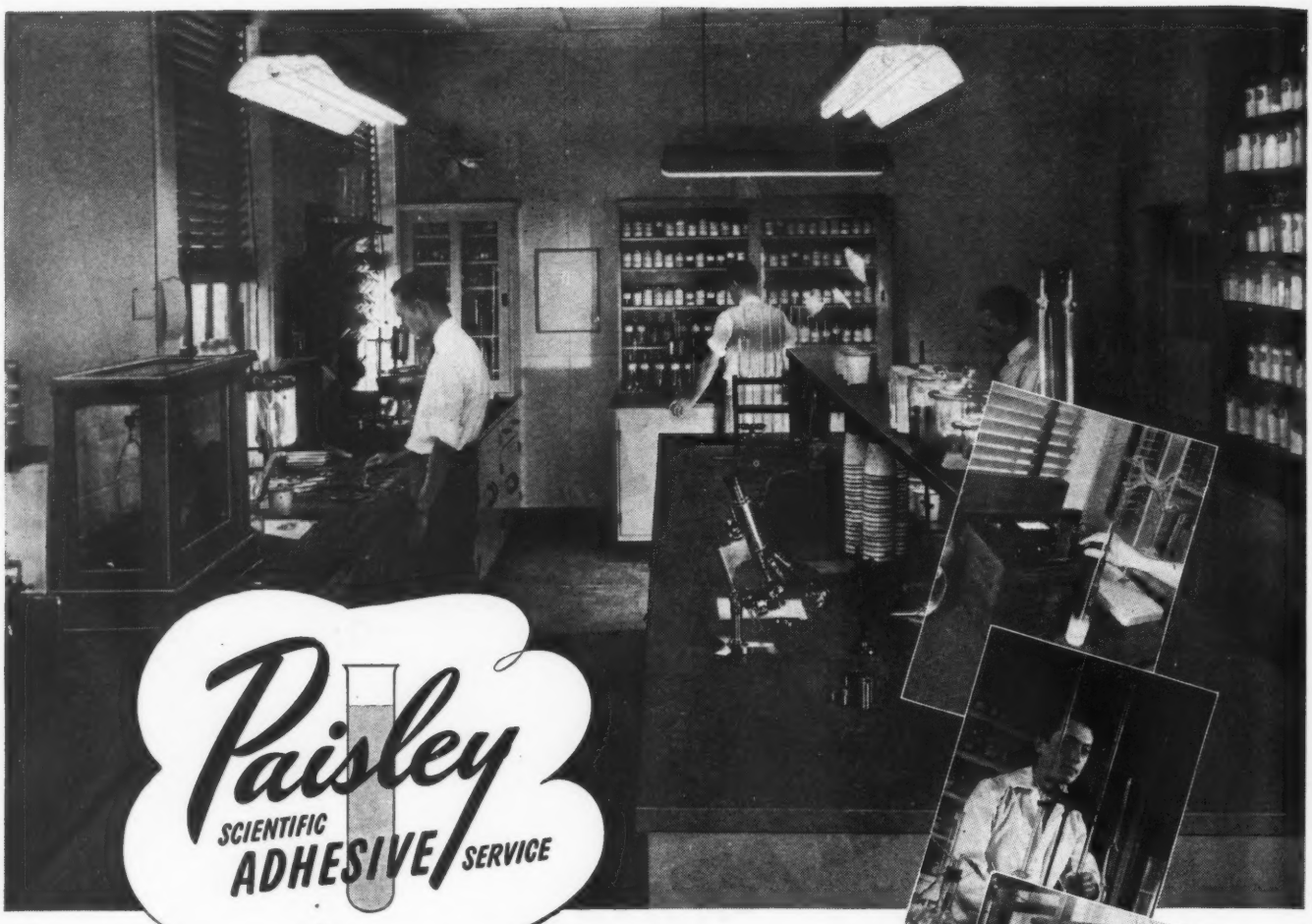
● Write for actual samples of FIDEL-I-TONE reproductions. You will find them helpful in planning your postwar packages.

* Trade-mark

The Lord Baltimore Press

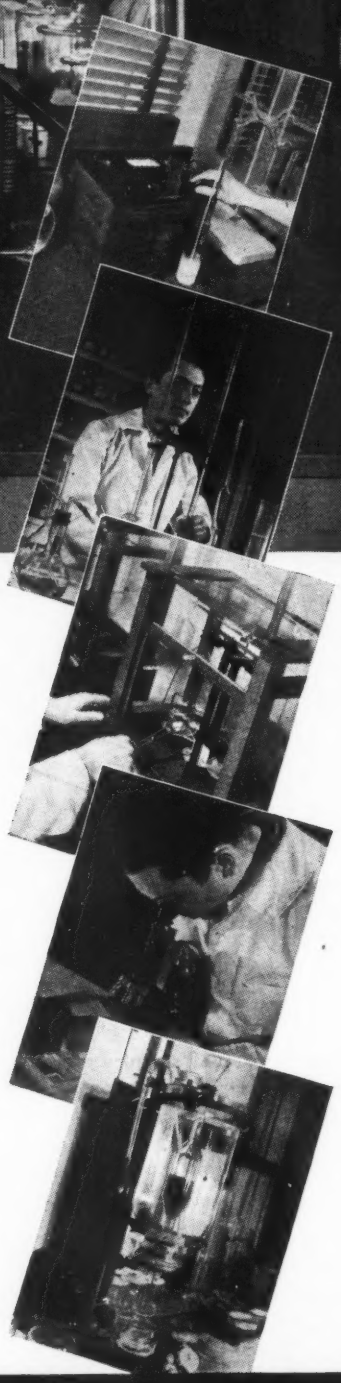
1500 Greenmount Ave., Baltimore 2, Md.

Sales Offices: 595 Madison Ave., New York 22, N.Y.—ELdorado 5-4180



MAKE THIS *Your* ADHESIVE LABORATORY

When you need help with your adhesive problems, or if you should want better results in your gluing or packaging operations, submit the facts to your nearest Paisley Laboratory for full analysis. Here, skilled adhesive engineers are always available to you for consultation. Few manufacturers can afford to maintain their own adhesive laboratories. That's why hundreds of leading concerns in every industry regularly send us facts and samples of labels, cartons, fabrics, and other materials for study and testing. They depend upon the recommendations of Paisley's adhesive experts to provide uninterrupted operation of their production lines. Write today for our "Adhesive Operation Data Sheet"—Return it promptly with all information asked for. There is no cost or obligation involved!

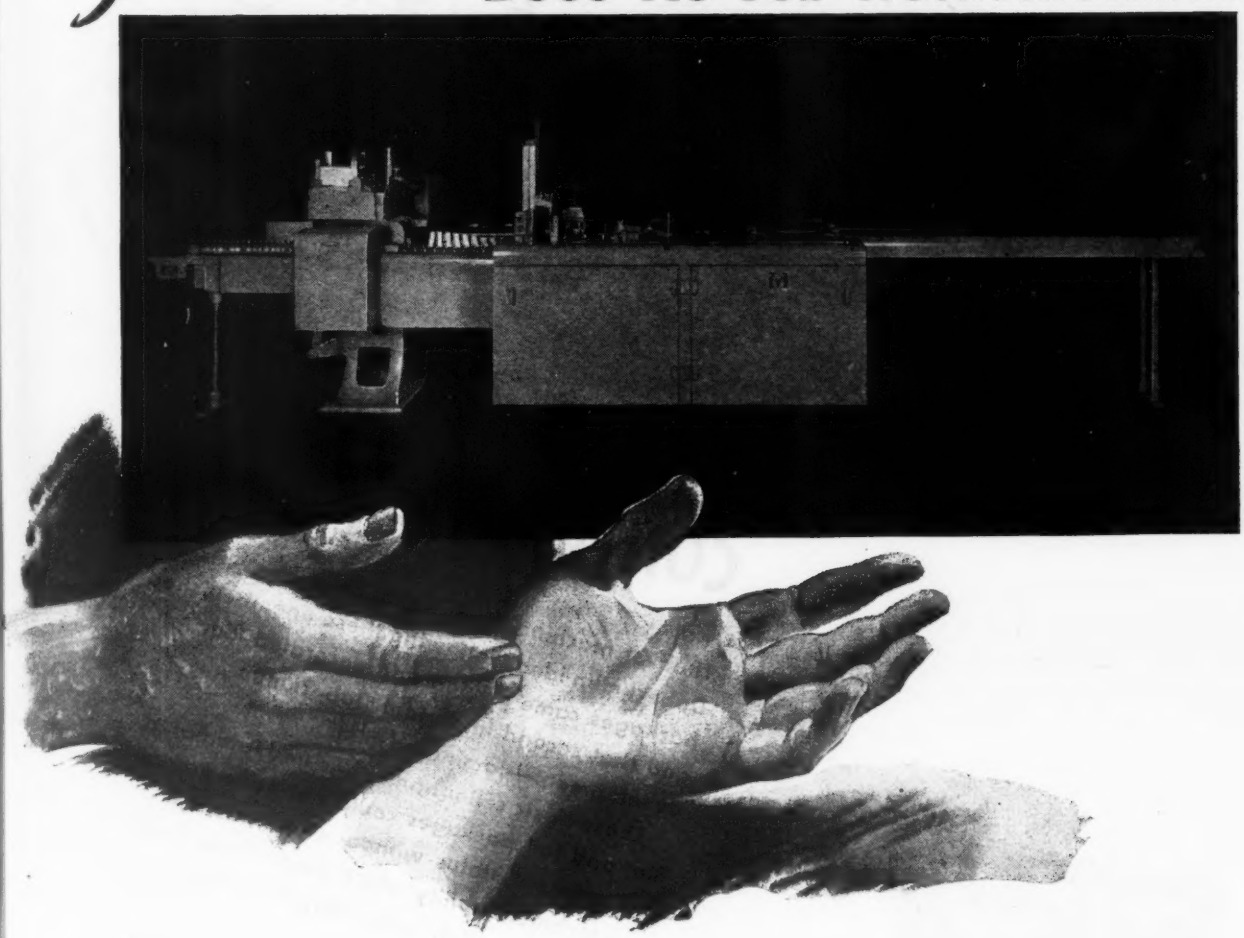


PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements, and Related Chemical Products

1770 CANALPORT AVE., CHICAGO 16, ILL. ★ 630 W. 51st STREET, NEW YORK 19, N. Y.

Green Hands . . . But The Jones Constant-Motion Cartoner Does Its Job Notwithstanding



Operation by unskilled hands is a hard test for any machine. But it's a test that the Jones Constant-Motion Cartoner always passes. For our designers are always seeking the simple, the positive, the foolproof machine.

We aim for: (1) The fewest moving parts needed to perform complex operations. (2) Smooth, trouble-free operation, with automatic protection against faulty cartons or loads. (3) The least possible handling of materials.

And Jones cartoners are not designed on the drawing board alone. New ideas—vital improvements—are conclusively tested with complete working models. There's never any guesswork as to how a Jones Constant-Motion Cartoner will perform.

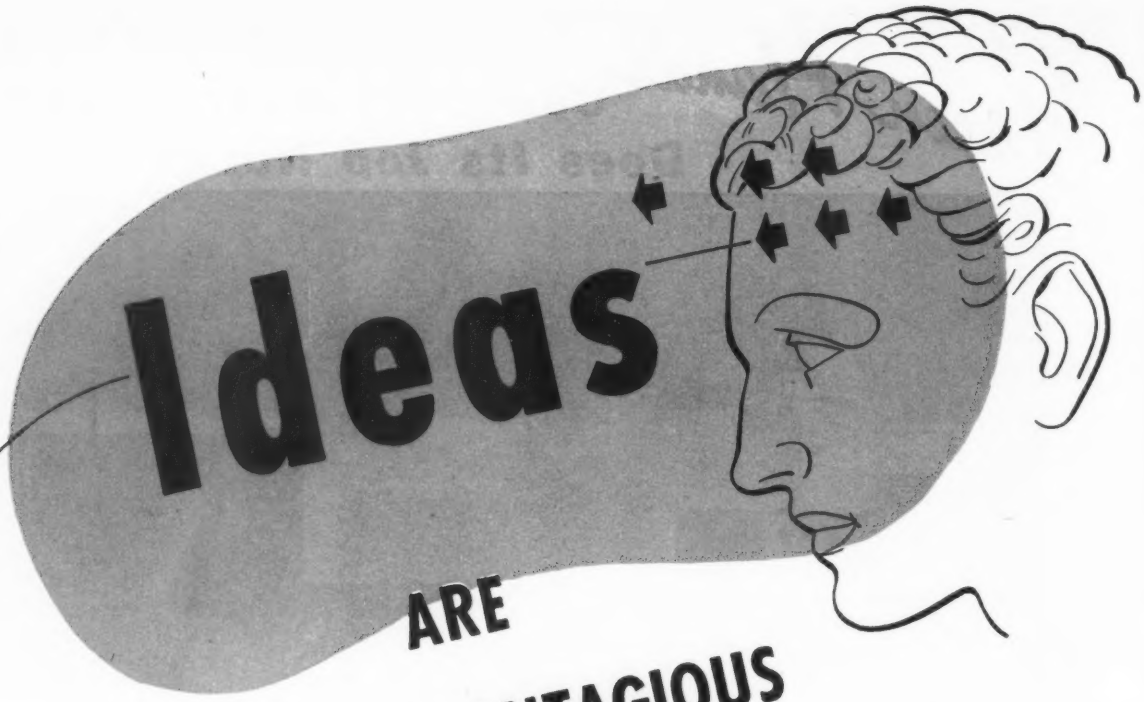
That is why a Jones cartoner is so fast—so long-lived—so dependable, even with "green hands" at the controls. That is why you get highest production at lowest unit cost.

Remember — your competition will very likely be using Jones equipment. Why be at a disadvantage in the postwar world?

R. A. JONES AND COMPANY, INC.

P. O. Box 485 CINCINNATI, OHIO

Ideas ARE CONTAGIOUS



The first machine-made cellophane bag was a Dobeckmun idea. Following these unembellished packages came printed and decorated film and that second important Dobeckmun development—laminated film.

These basic cellophane bags and laminated film and foil packages could not have grown to their present status without expert creative and technical ability which made these packages more useful, more attractive, more sales-producing.

From this organization, with 29 centuries of collective experience, you can obtain new and effective ideas that will win favor for your products.

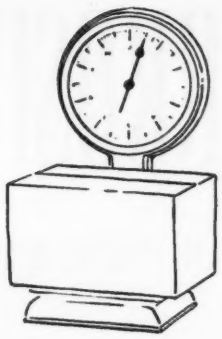
With stiffer competition ahead, it's good sense to ask us for practical suggestions now, and thus insure quicker deliveries after military demands have eased. The Dobeckmun Company, Cleveland 1, Ohio. Branches at Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco and Seattle. Representatives everywhere.

CLEVELAND PLANT

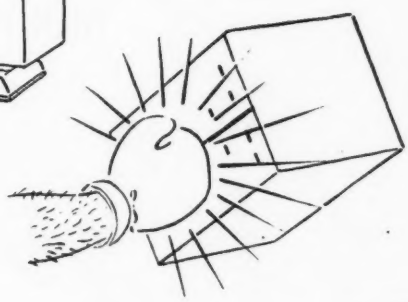
DOBECKMUN

SELF-SELLING PACKAGES IN PROCESSED FILMS AND FOILS

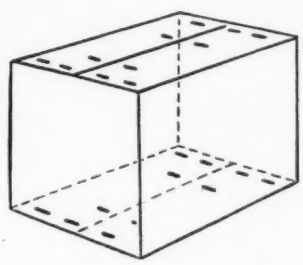
Light on the Scales



...but Heavy on Performance



Thanks to Morrison-stitched Steel Backbones



Morrison-stitched cartons provide shippers the best, most economical packaging. Stitching is the fastest, most effective method of closure and Morrison Stitchers produce a job that can't be beaten for speed, strength and economy.

Check these high speed heavy-duty machines today. They're available in these models: top stitchers, bottom stitchers, combination units, side seamers and arm machines. Send the coupon for complete information.

Model SLM 25" Throat, top sealer, usually used to stitch both top and bottom of containers of either corrugated or solid fiber board after they are packed. Equipped with blade anvil arm and quickly adjustable roller-top table, as shown. Available in 33" throat (Model SLP).

We also manufacture a complete line of book, steel, metal and aircraft stitchers.

MORRISON
STITCHING MACHINES

SEYBOLD DIVISION • HARRIS-SEYBOLD-POTTER COMPANY
DAYTON F7, OHIO

Sales and Service Representatives in All Principal Cities in the United States and Canada

MP-745

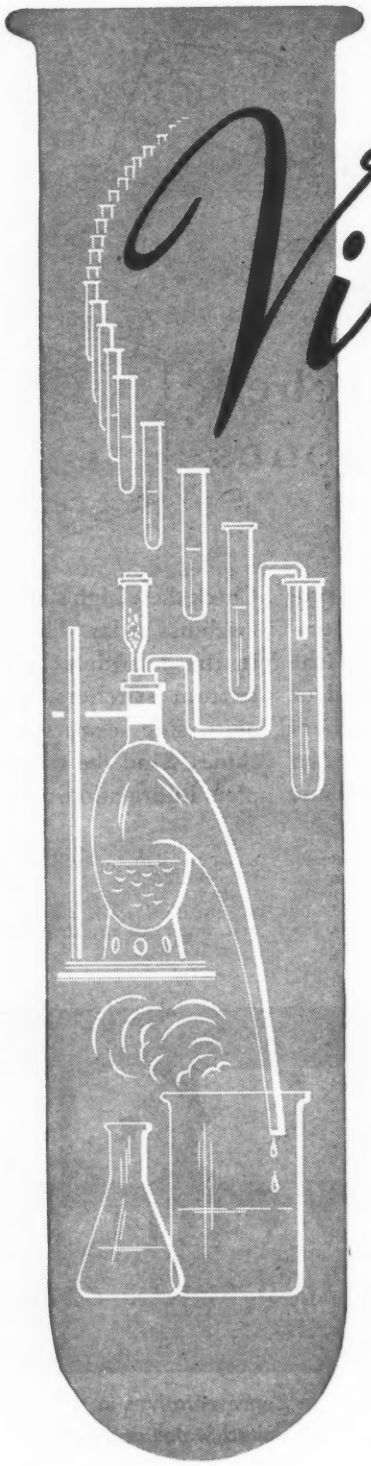
Harris-Seybold-Potter Company
819 Washington St., Dayton F7, Ohio
Please send information and complete specifications on Morrison Carton Stitchers.

*NAME*_____

*COMPANY*_____

*ADDRESS*_____

PACKAGING CORROSIVE FORMULAS?



THEN YOU'LL WANT TO KNOW MORE ABOUT..

Vinicote

TRADE MARK

THE exclusive trade name "Vinicote" designates a series of more than 50 protective inner coatings used in conjunction with Sheffalloy *Sheffield Process* Collapsible Tubes. VINICOTE offers an amazing lack of reaction or miscibility of product with coating. There is no discoloration of product, no disintegration of coating. Developed and highly perfected by our chemical research laboratories, and applied by our exclusive methods, VINICOTE assures a non-flaking, evenly applied coat to tube interiors only, outer tube remaining clean for efficient closure and jaw action.

VINICOTE offers entirely new merchandising and sales opportunities for a score of products which formerly could not be successfully packaged in convenient collapsible tubes. Naturally all products do not require VINICOTE protection. Our chemists will be glad to analyze your product to determine whether it will benefit by the use of VINICOTE on the Sheffalloy *Sheffield Process* Tubes you use. Ask for full information today.

Sheffalloy TRADE MARK REGISTERED

SHEFFIELD PROCESS TUBES

NEW ENGLAND COLLAPSIBLE TUBE CO.

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THE WILCO COMPANY, 6800 McKINLEY AVE., LOS ANGELES 1

MOISTURE VAPOR BARRIER

BY *Melrose*

BAGS
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Specified by **U.S. ARMED FORCES**
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Our fighting forces demand and deserve the finest equipment that skilled American workmanship can produce.

. . . But it is just as important that your products reach our armed forces in fighting condition, unharmed by rust or corrosion. Our recently expanded quarters enable us to give you extremely prompt deliveries on moisture vapor barriers. We'll be glad to answer all inquiries.

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MELROSE

No "Annie Oakley's"

The price of admission to readership in Modern Plastics is strictly a cash proposition.

In its entirety, the magazine's present full house of 11,096 A.B.C. represents purchased participation . . . bought by the readers and paid for by the readers . . . in advance!

At $5 per reader, per year, Modern Plastics subscribers are annually investing more than fifty-five thousand dollars of their own money—in return for which they seek plastics guidance from those who are qualified to publish it.

And that's not all . . . Approximately 5,000 extra new names have, within recent months, been added to a separately recorded "paid in advance" roll, to be officially entered as subscribers as soon as paper availability permits.

This ever-increasing interest in the plastics industry, as well as this demonstration of reader-confidence in the ability of Modern Plastics to editorially deliver "value for value received", are very significant, advertising-wise.

Modern Plastics is the accredited meeting place of plastic minds — and where so many minds meet regularly each month, the opportunities for business are good!

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ABC MEMBER AUDIT BUREAU OF CIRCULATIONS

. . . the only ABC plastics paper . . . the field's established institution . . . one of America's great industrial publications

PUBLISHED BY MODERN PLASTICS, INC.
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It takes **6** *departments*

to make **B & P CARTONS**

BROOKS & PORTER INC.

304 HUDSON ST. · NEW YORK

Packaging and display specialists for half a century

In perfect condition...ready
ORDNANCE PARTS
EMERGENCY RATION

for instant use at the battlefront ...that's the way war essentials arrive when they're protected by

FLEXIBLE PACKAGING

MEMBER FLEXIBLE · PACKAGING fpi INSTITUTE

EVERY day millions of tons of essential matériel are moving "up forward" in the Pacific. If it is *convoy loaded,* this matériel must be guarded against corrosion and deterioration by sea-air and salt water. If it is *combat loaded,* it must be protected against tropical humidity.

Flexible Packaging is a vital factor in the success of Pacific operations. It is helping to keep ordnance, food, and medical supplies in perfect condition *to the moment of use* by our armed forces.

Here are the reasons: Package fabricators are custom-building each flexible container to meet the protective need — according to rigid government specifications. Because of the wide choice of papers, films, foils, coatings and laminating agents available, fabricators are able to build containers that are tough, light in weight, and extraordinarily protective.

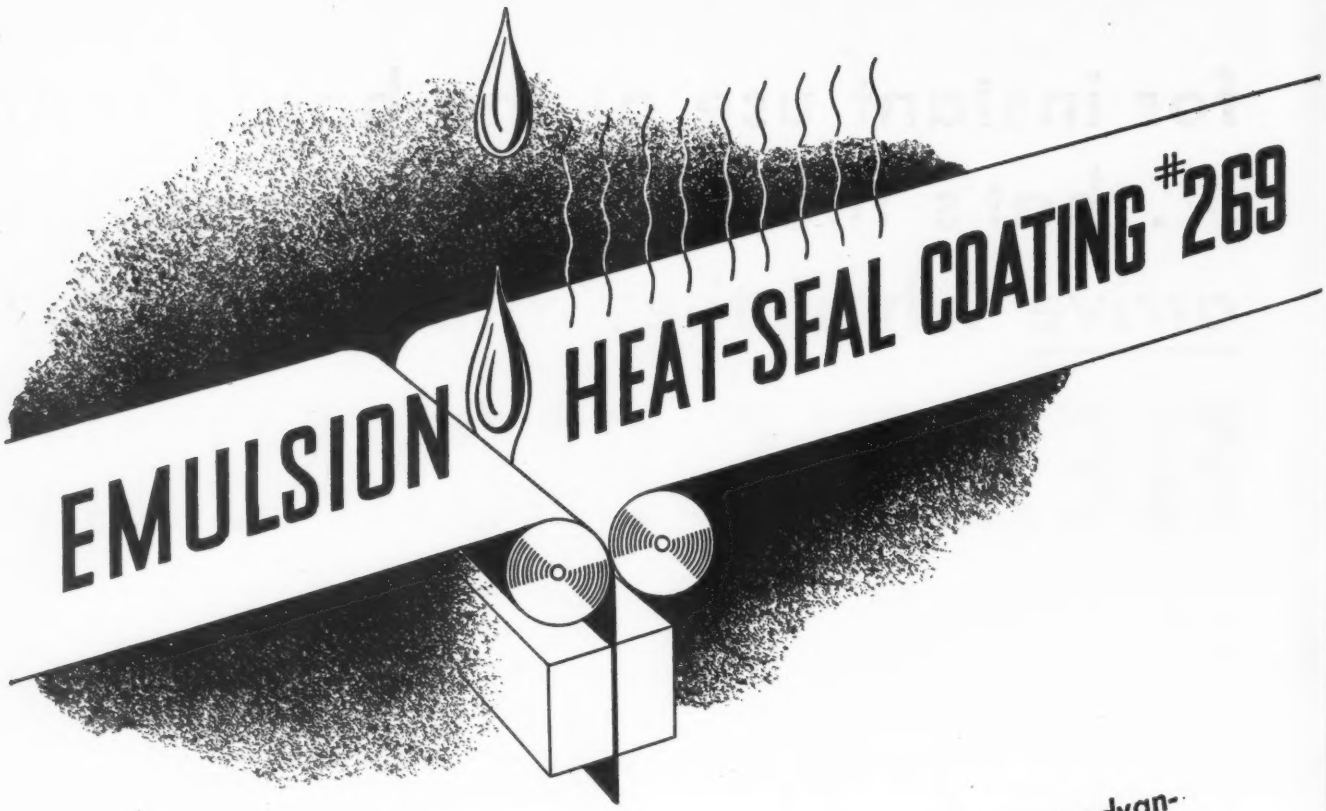
Naturally this vast and exacting wartime undertaking has brought about the development of timely and unusual types of flexible containers. Many of these new developments have wide peacetime application of interest to all who are thinking in terms of post-war markets.

Member companies of the Flexible Packaging Institute will continue to concentrate on war work for the duration. But if you have a peacetime packaging problem, the Institute will be glad to assist you in every way. Simply write to the address below.

Allied Paper Bag Corporation, Baltimore, Md.
American Bag & Paper Co., Philadelphia, Pa.
The American Paper Goods Company, Kensington, Conn. and Chicago, Ill.
Arkell & Smiths, New York, N. Y.
Arlette, Inc., Bloomfield, N. J.
Beier & Company, Chicago, Ill.
Bemis Bros. Bag Co., Indianapolis, Ind.
Benj. C. Betner Co., Devon, Pa.
Alfred Bleyer & Co., Brooklyn, N. Y.
Brown Paper Goods Co., Chicago, Ill.
Capital Envelope Co., Ltd., Los Angeles, Calif.
Central States Paper & Bag Co., St. Louis, Mo.
Central Waxed Paper Company, Chicago, Ill.
Cupples-Hesse Corporation, St. Louis, Missouri
Custom-Made Paper Bag Co., Long Island City, N.Y.
Diaphane Bag Corporation, Philadelphia, Pa.
Dixie Wax Paper Co., Memphis, Tenn. and Dallas, Texas
Duplex Coffee Bag Co., Glendale, N. Y.
The Jaite Company, Jaite, Ohio
Kehr Paper Products Co., Philadelphia, Pa.
Kellogg Container Division, United States Envelope Co., Springfield, Mass.
Kennedy Car Liner and Bag Company, Inc., Shelbyville, Ind.
Marathon Corporation, Menasha, Wis.
Milprint, Inc., Milwaukee, Wis.
Monoca Bag & Mfg. Co., Inc., Toledo, Ohio
Moser Bag & Paper Company, Cleveland, Ohio
Oneida Paper Products, Inc., New York, N. Y.
Orchard Paper Company, St. Louis, Mo.
Paramount Paper Products Co., Inc., Philadelphia, Pa.
Thomas M. Royal & Co., Philadelphia, Pa.
C. E. Stevens Bros. Inc., Baltimore, Md.
Union Bag & Paper Corporation, New York, N. Y.
Western Paper Converting Co., Salem, Oregon

FLEXIBLE PACKAGING INSTITUTE

369 Lexington Avenue » » » » New York 17, N. Y.



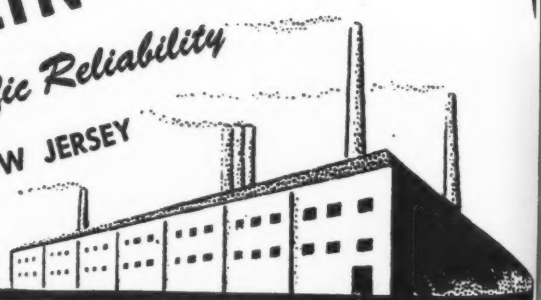
This important heat-seal coating offers a number of important advantages. It is non-toxic and ideal for sealing food containers. Especially adapted to bag closures, it is grease-proof and non-blocking. In addition, Emulsion #269 may be heat-sealed at the low temperature of 225°F.

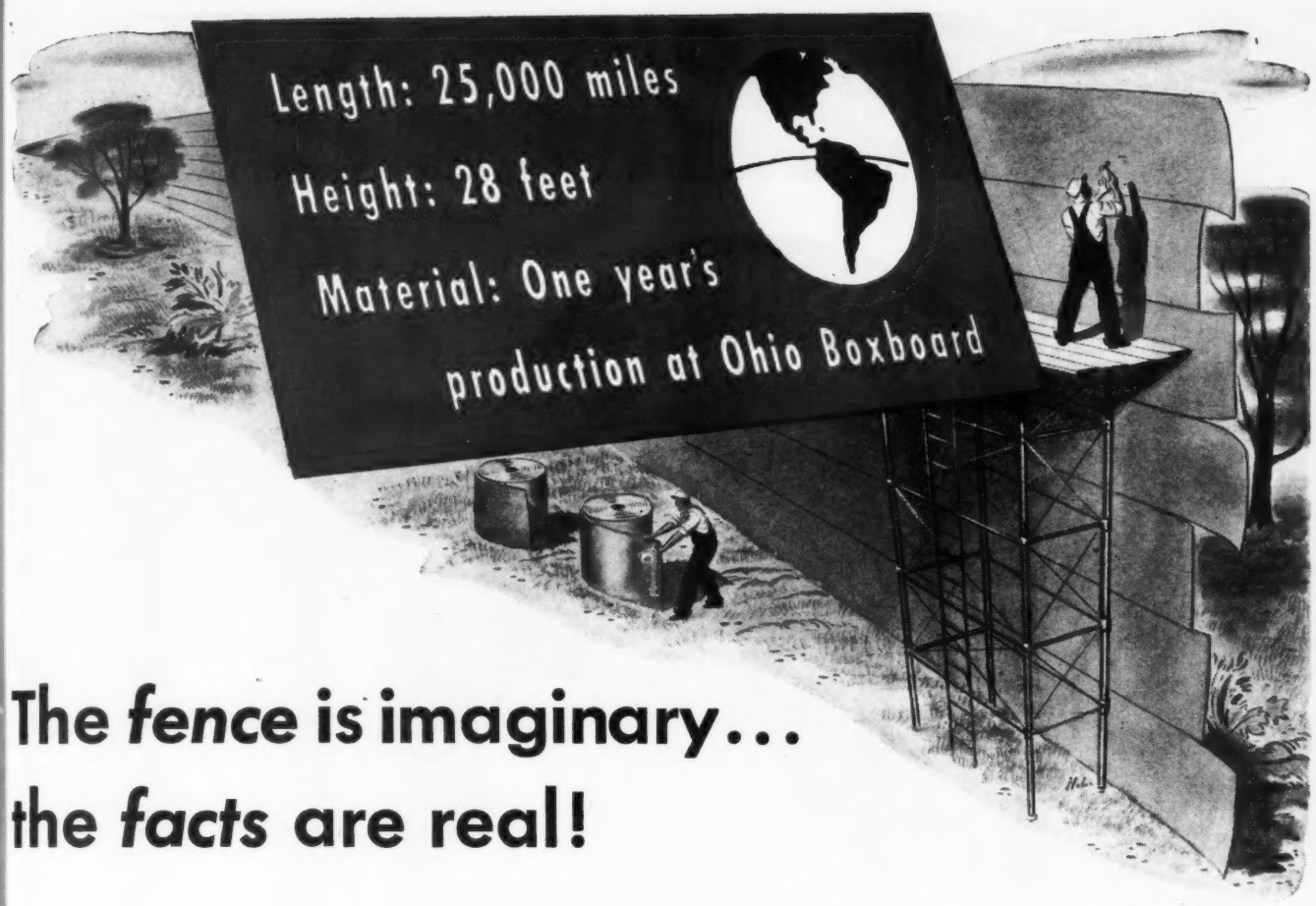
This is one of a number of special coatings developed for the packaging industries by us.

FLOOD & CONKLIN MFG. CO.

Coatings of Scientific Reliability

NEWARK 5, NEW JERSEY





The *fence* is imaginary... the *facts* are real!

You never saw a 28 foot fence of boxboard stretching around the world. You never will. It is strictly a statistical fence.

One year's production at Ohio Boxboard, assuming an average caliper of .020 and an average weight of 75 pounds per thousand square feet, would be enough to build such a fence.

The customers who build this annual volume come to us because they find the quality of our boxboard and the precision and uniformity of our cartons and containers eliminate interruptions on high speed packaging lines.

Our complete facilities, production of boxboard, cartons, containers, and converted specialties, together with our research and development enable us to provide the advantages of full coordination in **planned packaging.**

THE OHIO BOXBOARD CO.

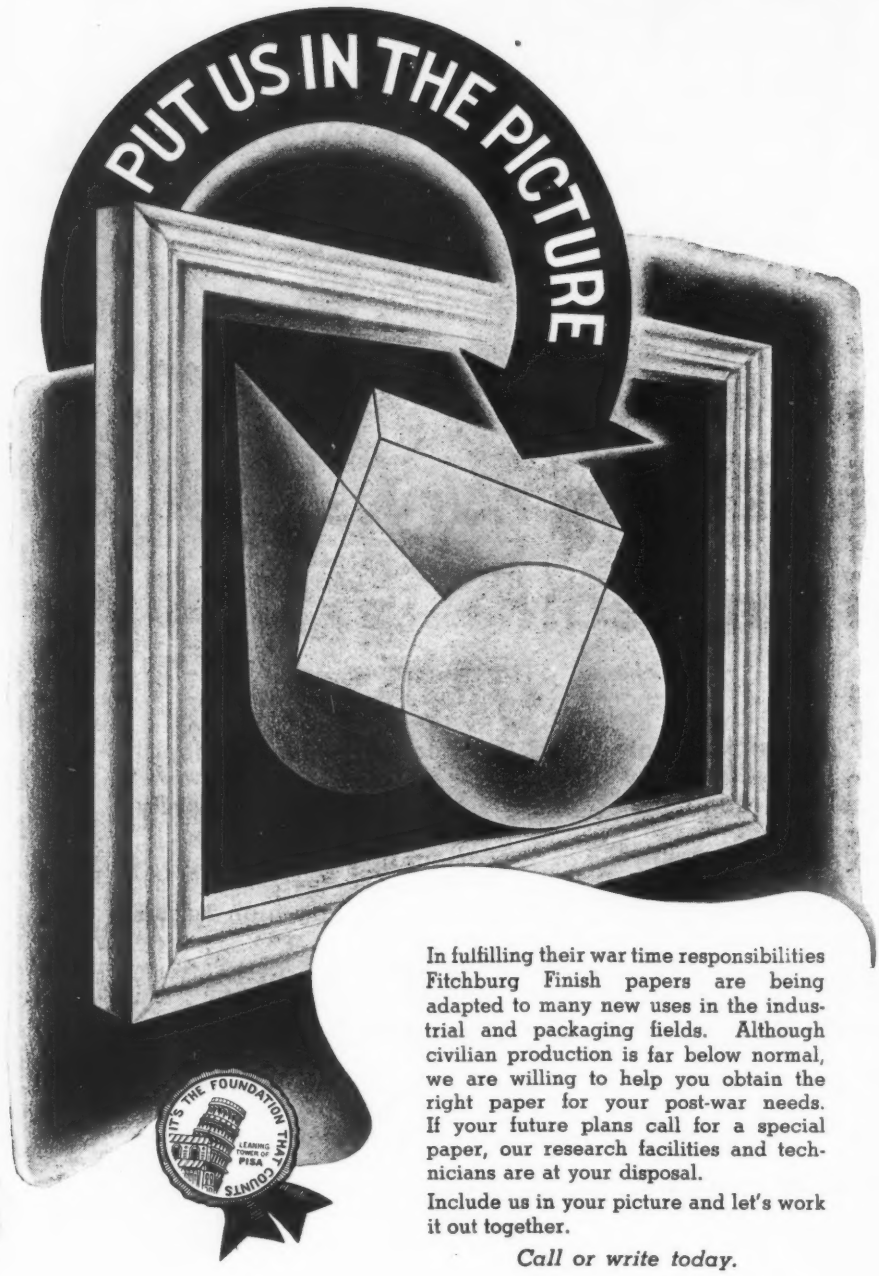
RITTMAN, OHIO

Manufacturers of paper board, folding boxes, corrugated and fiber shipping containers, and converted specialties

SALES OFFICES: RITTMAN • AKRON • CLEVELAND • CINCINNATI • PITTSBURGH • NEW YORK • CHICAGO

Capacity 500 tons daily

PUT US IN THE PICTURE



In fulfilling their war time responsibilities Fitchburg Finish papers are being adapted to many new uses in the industrial and packaging fields. Although civilian production is far below normal, we are willing to help you obtain the right paper for your post-war needs. If your future plans call for a special paper, our research facilities and technicians are at your disposal.

Include us in your picture and let's work it out together.

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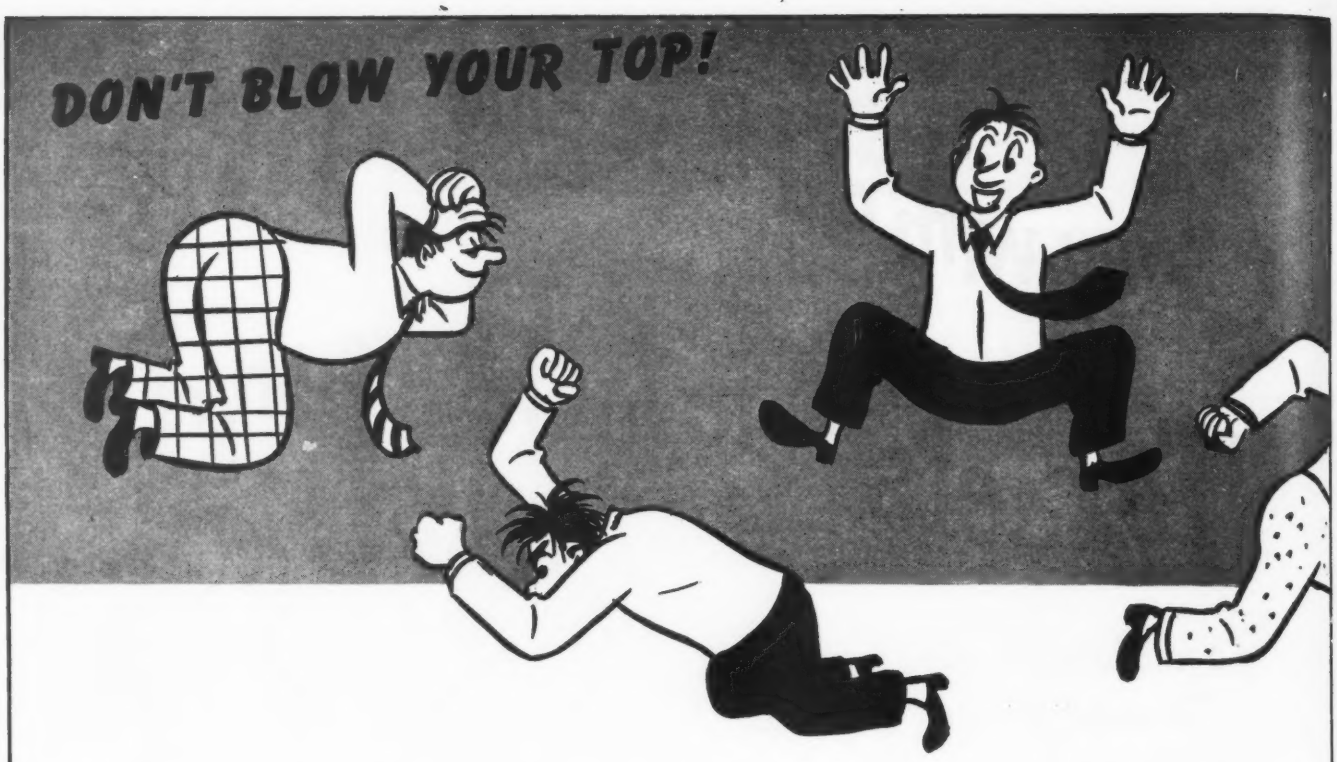

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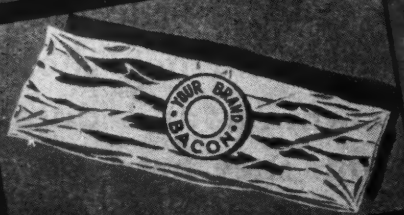

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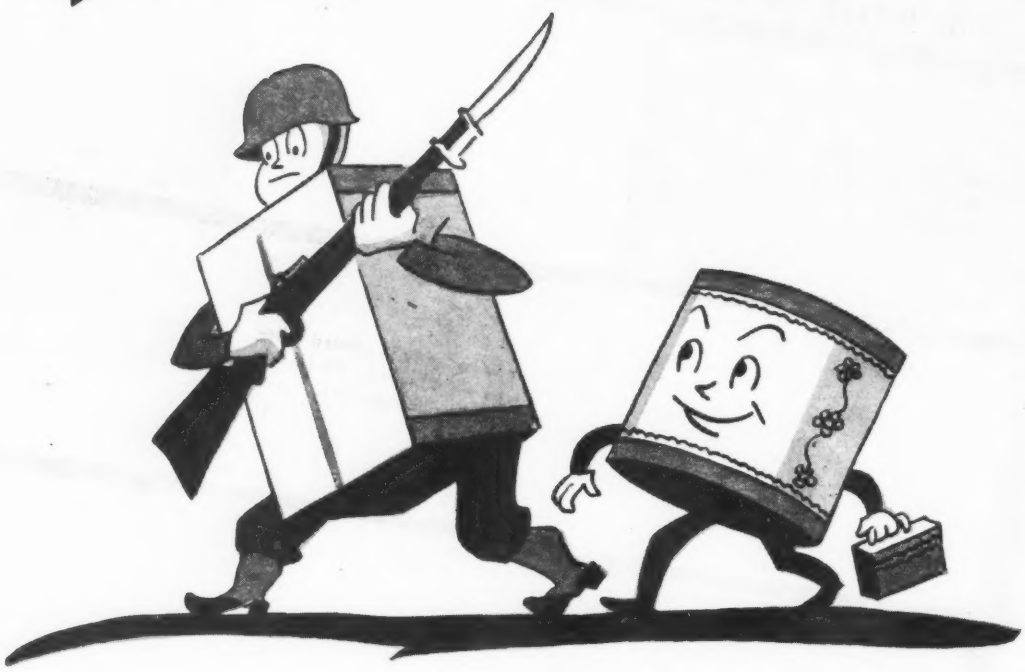

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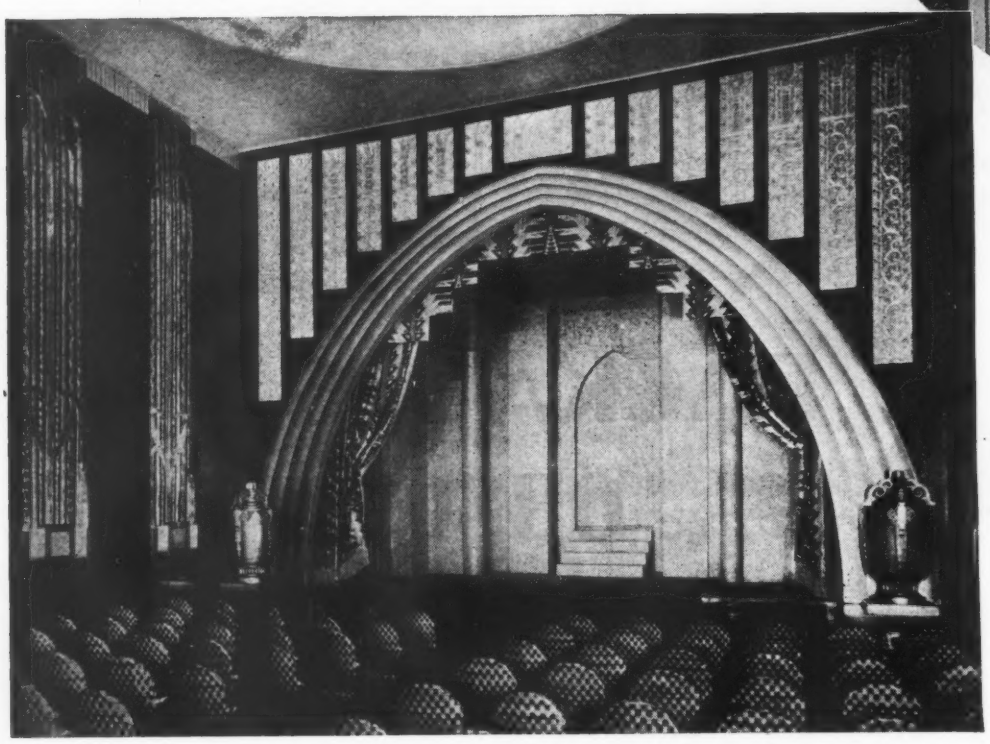

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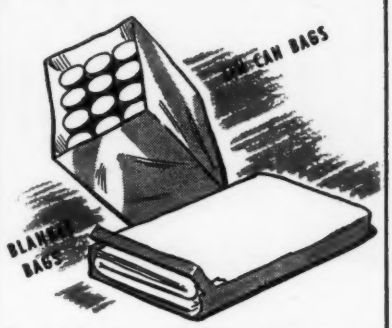

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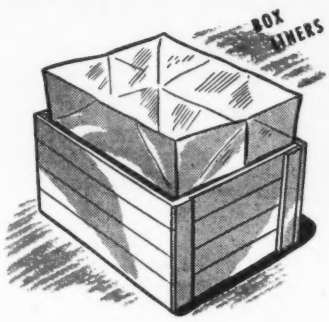

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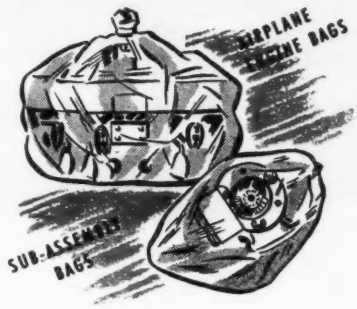

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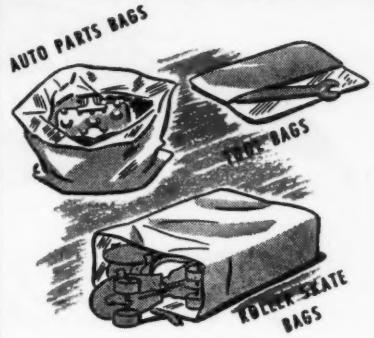

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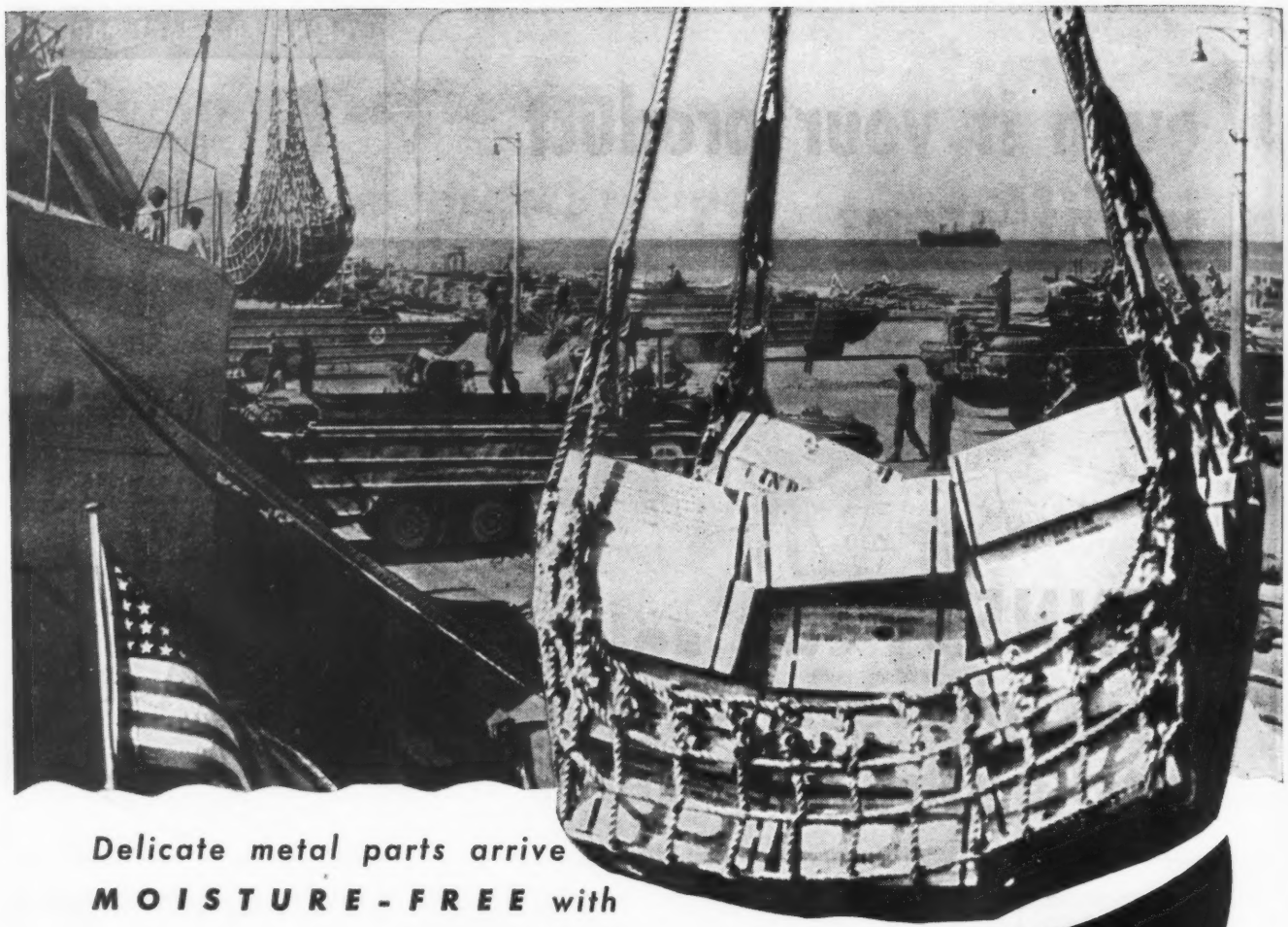

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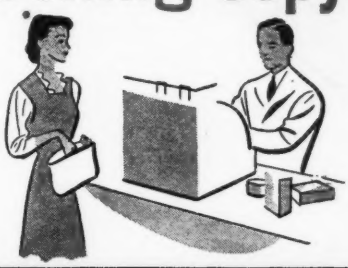

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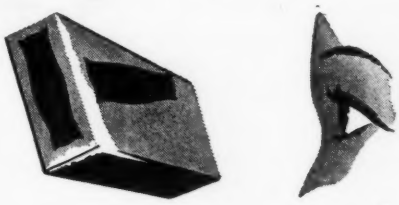

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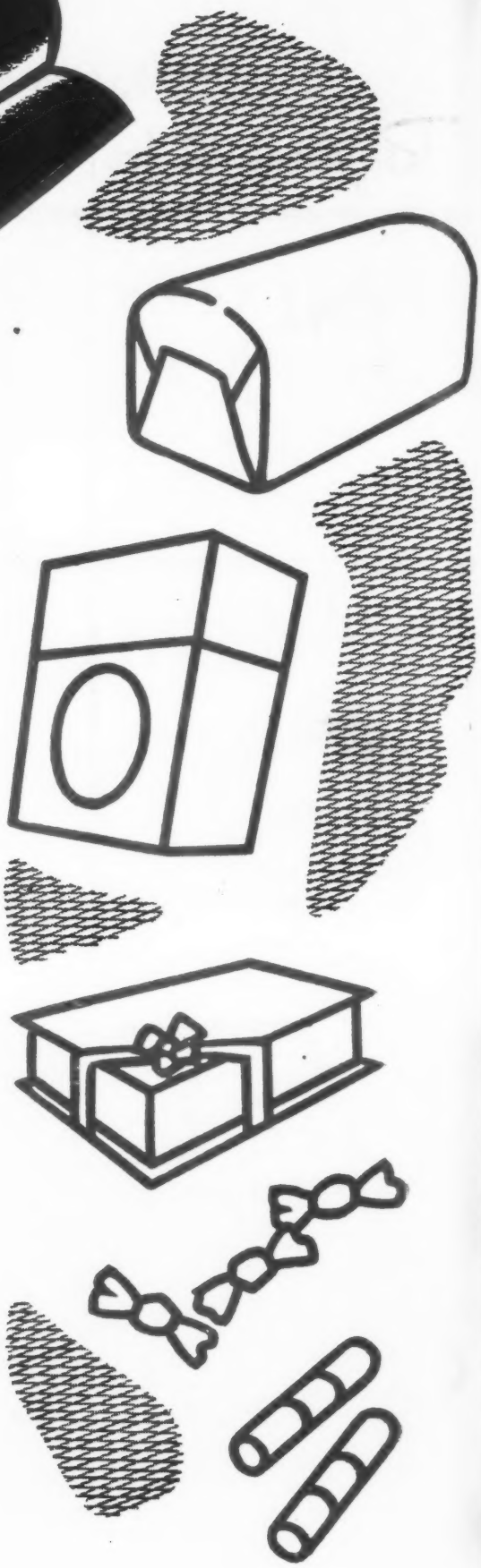

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MODERN PACKAGING
VOLUME 18 JULY, 1945 NUMBER 11

Packaged produce . . . the Columbus experiment

For the last year the citizens of Columbus, O., have been acting unwittingly but willingly as the subjects of an experiment that holds much for the future expansion of packaging as well as for the conservation of the nation's food supply.

In Columbus, the Great Atlantic & Pacific Tea Co. has been operating, in collaboration with Ohio State University and a group of packaging suppliers, the first pilot plant for central automatic pre-packaging of fresh fruits and vegetables and their self-service sale from open-top refrigerator cases.

Because fresh produce is one of the few great fields left for packaging to conquer, there are few subjects of greater current interest. The A & P operation provides the laboratory from which valuable postwar data can be drawn.

In the three Columbus markets fed by the central packaging plant produce sales have risen sharply after the introduction of packaging and have maintained a high level. Shelf life—which in the case of produce means maintenance of peak quality and appearance—has been lengthened from one day to five and even 10 days. Up to 60% of the waste that previously resulted from trimming and spoilage has been eliminated—and this saving alone is expected to pay the cost of packaging when a slightly larger volume is attained. Every item is sold at exactly the price prevailing for the same item, unpackaged, in other A & P stores on the same day.

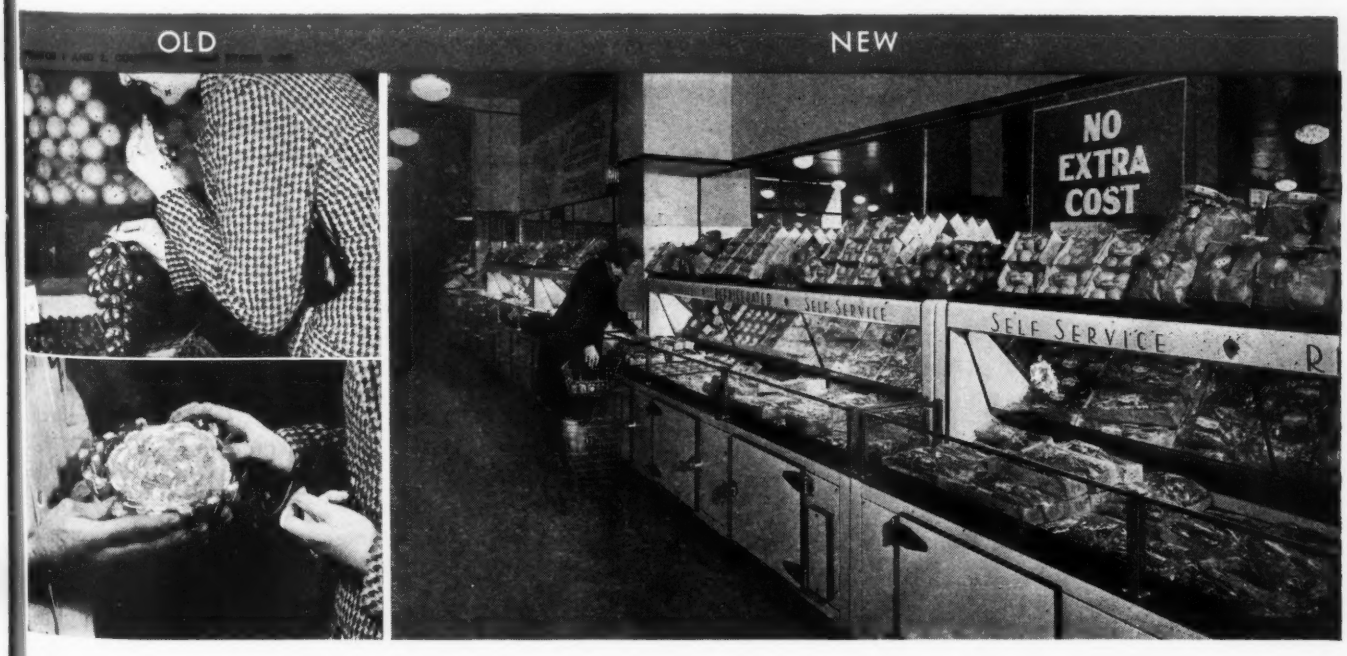
A view of the modern, self-service produce department in one of these Columbus stores (Fig. 3) is a revelation. A row of four open-top refrigerator cases, similar to those used in pre-packaged meat operations,[1] is ranged along the back of the store. Brightly lighted, slanting background mirrors (Fig. 5) reflect the display of cellophane-packaged produce. Background wall mirrors, at head height, reflect the entire expanse of the store and add beauty to the setting.

One of the first striking impressions is of the cleanliness and efficiency of the operation. The floor is spotless; there is no litter of lettuce and carrot tops, which in other stores clerks are busy trimming and discarding. There is, in fact, no clerk in sight. Every package is pre-labeled with weight or quantity and price, and the shopper simply pushes her cart down the line, picks up the packages she wants, puts them in her basket and passes on to the checkout. There is no waiting in line at the scales—in fact, there are no scales—and no traffic tie-up. Two to three times as many customers can be handled in a given period, without confusion and in less floor space.

Temperature in the self-serve cases, despite their open tops,

[1] See "Packaged Meats," MODERN PACKAGING, Feb. 1945, p. 77.

1 and 2—Contrasting old conventional selling method in which much produce is damaged by consumer handling with 3—Self-service produce in Columbus A & P market. Every item is transparent packaged and labeled and held just above freezing in open refrigerated cases. Note cleanliness and the freedom of traffic.



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4—Specially built wrapping machine in A & P warehouse, shown wrapping head lettuce in u-boats Boards are fed and set up automatically; operator puts lettuce in place and machine does the rest, wrapping and sealing the lettuce in cellophane, attaching thermoplastic top label and returning packages to the roller conveyor at right.

is uniformly maintained at about 40 deg. at the level where the packages are displayed. Reserve stocks of packaged goods are held at 37 to 38 deg. in large storage chambers in the base of the cabinet. The only attention required is to keep display packages neatly arranged and replenish them occasionally from the reserve stock, seeing that produce moves in the order in which it was packaged. The date of packaging is coded on the label.

Every package follows the principle of maximum visibility (Figs. 5, 11, 12, 13, 14). The majority of the items, machine-packaged, are in paperboard u-boards or shallow, four-sided trays, overwrapped with moistureproof cellophane and heat-sealed. Some items, such as peas and carrots, are packaged in cellophane bags, gathered at the top and tightly sealed with tape. A few stable items, such as dry onions, are packaged in kraft bags with cellophane windows.

The packaging operation, in the central A & P warehouse, is also a revelation. The entire operation for the three stores is conducted in one room. All packages are wrapped, heat-sealed and labeled automatically on a highly adaptable machine (Fig. 4), specially developed for this experiment.

It is important to note that the Columbus experiment differs from previous attempts at produce packaging in several respects. It is the largest in scope—both as to volume and variety of items packaged. It is the first to use automatic central packaging. It is the first to stress the importance of continuous refrigeration, from the grower to the consumer.

Finally, the Columbus experiment represents the first scientific, cooperative approach to the problem by all branches of the packaging industry, working with representatives of the grower, the commission merchant and the retailer. It starts with the fundamental premise of packaging as a means of improving and conserving food, rather than as a mere sales convenience and inducement.

All phases of the experiment are under the continuous guidance of a committee including Frank McGeough, Columbus unit head of the A & P as chairman; Walter Moxley, of the A & P produce department, secretary; Dr. Charles W. Hauck, of the Ohio Agricultural Experiment Station, Ohio State University; J. D. Rankin, of E. I. du Pont de Nemours & Co., Cellophane Division; Arthur Biddle, of Hussmann Refrigeration, Inc., manufacturers of refrigerator cases;

5

5—Shopper's-eye view of a produce case: left to right, leaf lettuce, green beans, lemons. Note how the mirror in back of the display doubles the dramatic effect.

James Morris, in charge of research and development for the Ohio Boxboard Co.; Ralph C. Russell, of the Oliver Machinery Co., and George Bremer, head of the Columbus unit of the Atlantic Commission Co., produce-buying affiliate of the A & P.

It all goes back to a meeting on the campus of Ohio State University in the spring of 1942. This meeting was called by officials of the University's School of Agriculture to discuss ways and means of improving the production and marketing of fresh fruits and produce, and was attended by officials of the University, the Ohio State Dept. of Agriculture and representatives of chain and independent food stores.

This meeting served to introduce Dr. Hauck and the Columbus officials of the A & P. They found that they were interested in the same thing; streamlining the production, handling and sale of fresh fruits and vegetables and eliminating the deplorable waste and spoilage.

This waste is estimated to average about 25% of all the

produce grown in this country. One authority[2] declares: "What agricultural economists have tended to call 'normal wastage' is draining away from 20 to 30% of all food our farmers produce. One pound of food in every four that is grown is destined for the garbage dump! Two hours in every eight worked by our farmers, food processors and food distributors is time thrown away. Twenty-five acres of every hundred-acre farm are plowed, planted, cultivated and harvested—with the produce to be finally discarded as waste."

Columbus A & P officials, and particularly Mr. McGeough, had long been interested in utilizing packaging and refrigeration to further simplify shopping and to protect the goods from excessive handling and resultant spoilage. This was simply a projection of the traditional A & P policy of streamlining the distribution of food—a policy which had its inception 86 years ago when George Huntington Hartford, founder of the company, became impatient with the circuitous handling that ran the price of tea up to $1.00 a pound and simply chartered a boat to bring tea direct from India and sold it for 35 cents a pound.

Columbus A & P had some experience with the sale of prepackaged meat in refrigerated self-service cases, which had been very satisfactory. Only the shortage of meats had curtailed this growing trend. Cheese was another commodity that had come under the packaging-refrigeration influence, with excellent results. Mr. McGeough felt that produce, too, needed not only packaging but refrigeration for maximum preservation and salability, and he was anxious to test out his theory in practice.

Mr. McGeough's conclusion checked with the experience of Mr. Rankin of du Pont and his associates, who for more than 15 years had been preaching the advantages of packaging produce. While the more progressive growers and distributors were receptive to the idea, they got little encouragement from the retailers. Some items such as spinach, broccoli and mixed salad greens have been and still are packaged by the growers in cellophane bags, but without refrigeration at the point of sale they have demonstrated few advantages, other than sales appeal, over unpackaged produce.

With the collaboration of Mr. McGeough, Dr. Hauck and Mr. Rankin, the Columbus experiment was launched on a small scale in one retail store in February 1944. A number of produce items were wrapped by hand in moistureproof cellophane, sealed with a hand iron, and displayed in one of the open meat cases.

Without a word of promotion, there was immediate consumer acceptance. Sales rose sharply and stayed up. Studies were made of shoppers' reactions. They all appeared to be impressed with the cleanliness, convenience and better appearance of the produce, and some commented that the package acted as a "hydrator" to keep the produce fresh until use in the home refrigerator. From the start, signs assured the shoppers that they were paying no more for packaged produce.

From the store's standpoint, it was immediately apparent that trimming was eliminated and spoilage greatly reduced. Under refrigeration, the salable life of packaged items was miraculously lengthened. The produce department was *clean*, and traffic moved through it without interruption. The department didn't appear busy, but at the end of the day the cash register told the story.

The operation quickly advanced from a curiosity status to that of a serious experiment. An Oliver wrapping machine was drafted from the bakery department to replace hand wrapping in so far as possible, and Mr. Russell of the Oliver company was called in to consider building a similar machine especially adapted to produce. It was apparent that trays or u-boards would facilitate machine wrapping, and this brought Mr. Morris of Ohio Boxboard into the picture. Mr. Biddle of

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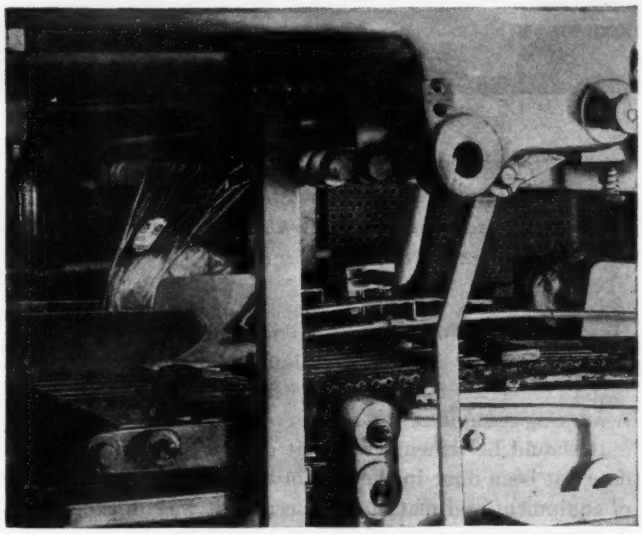

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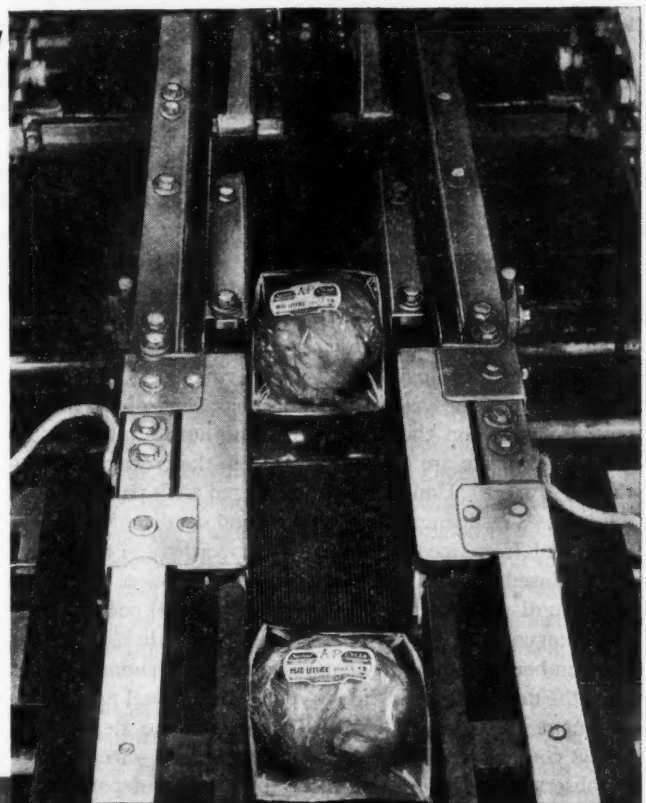
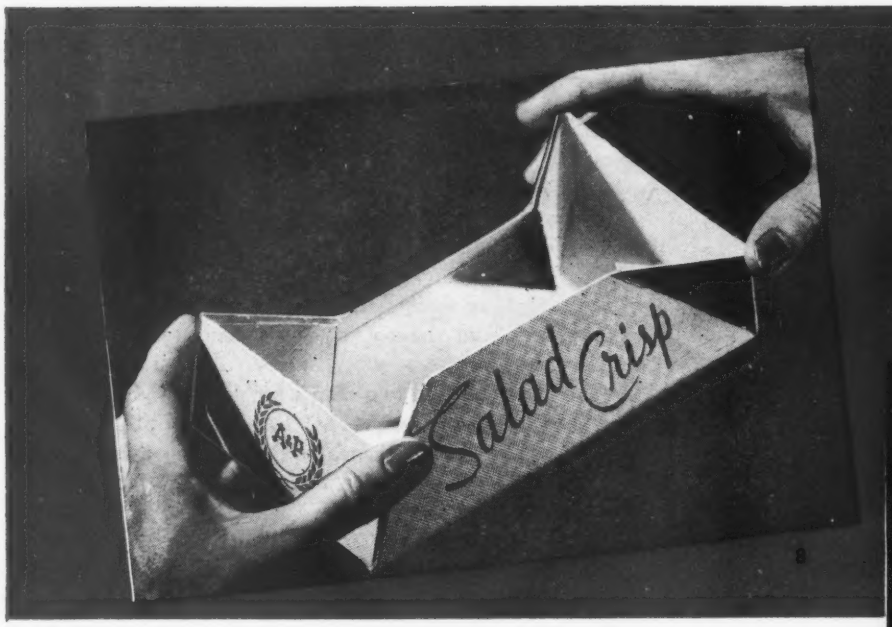


[2] Oliver, Robert T., "Normal Food Wastage," *The American Scientist*, Vol. 32, No. 4, Oct. 1944, pp. 268–272.

6—*Close-up of actual packaging operation. Cellophane fed from roll, with label positioned, comes down around package, is cut off as package moves to heat sealer.*

7—*View of machine from above, with packages moving toward camera. Package in center is just entering heat-sealing plates; one in foreground is moving off on conveyor.*



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8—The green and red paperboard trays come flat, are instantly set up as shown here. 9—The thermoplastic labels are supplied in roll form, pre-printed in red and green with the product name and all necessary information except the price and date, which are imprinted on machine.

Hussmann came in to give his advice on refrigeration. These men met with Mr. Rankin, Dr. Hauck and the three representatives of A & P and all were enthusiastic about the project. A working committee was formed on the spot.

It should be remembered that all the pioneering work to date has been done in the face of the most painful shortages of equipment and materials. Because it was an experiment, WPB was able to help on priorities for the new machine, and for cellophane A & P drew on its over-all allotment for food products.

An agreement with Dr. Hauck and the Ohio Agricultural Experiment Station was formalized. A & P set up a $5,000 fund for a year's study.

The University's primary interest, of course, was that of the growers. It sought to reduce waste and spoilage. It sought, furthermore, to improve the quality of produce offered by growers; to encourage standardization of variety, grade and pack; to encourage cooperative marketing; to reduce costs of distribution and to increase returns to growers. All of these aims could be ideally attacked, from the marketing standpoint, through the A & P experiment.

Throughout the year, Dr. Hauck has been observing and recording data on the operation. The nature and cause of physical damage are being studied from the growers' fields to the retail store. Comparing unpackaged with packaged produce, losses resulting from trimming and conditioning for display, and from reconditioning, are recorded. Price reductions caused by declines in quality or condition of produce while on display are noted. Weight shrinkage, packaged and unpackaged, is studied. Time studies are made to determine the number of man-hours required of store attendants to perform the necessary operations in the conventional produce department as compared with the self-service department. Direct comparisons are made where possible in selected stores by observations before and after the produce department is converted to self-service. Consumer acceptance of selected items before and after conversion is measured in terms of sales in proportion to traffic in the department, to sales of meats and groceries in the same store and to sales in other stores.

Dr. Hauck is not primarily concerned with packaging specifications or with costs; these are the responsibility of the A & P and industry representatives. The ultimate aim is to have central packaging for all 10 Columbus A & P stores, at which time it is expected accurate cost data can be drawn. So far, it is known only that there has been no increase in cost—that reduction in waste in time will pay for the packaging.

The three stores now operating have been selected to give a cross-section of income strata. One is in a working class district, a second in a middle class suburban area and the third in a higher income section. In these three stores every item sold in the produce department is packaged with the exception of oranges, grapefruit and potatoes. A & P policy keeps sales figures strictly secret, but it may be said that sales performance at each installation has been extremely satisfactory—fully justifying the pre-packaging practice.

Packaged on the machine, with heat-sealed transparent overwraps, are asparagus, beans, beets, broccoli, brussels sprouts, celery (hearts and whole), cauliflower, corn, endive, lettuce (leaf and head), onions (green), parsley, peas, parsnips, peppers, rhubarb, radishes, spinach, tomatoes, turnips, grapes, lemons, pears, plums and strawberries.

All of the above items are handled with only nine sizes and shapes of the special collapsible paperboard tray (Fig. 8). Head lettuce, however, usually is wrapped merely in a u-board, which is more readily adapted to the various sizes of heads.

Packaged by hand in cellophane bags with tape closure are carrots, apples and occasionally peas and other items. Dried onions are usually packaged in a kraft bag with transparent window.

The produce moves into the warehouse from refrigerator cars in the usual manner. Containers are usually iced and every effort is made to preserve the low temperature of the

12

10—*Close-up of the finished label. Date "15" is barely distinguishable under "cauliflower"; is for store use only.* **11**—*Typical tray package; celery is cleaned, trimmed, ready to serve.* **12**—*Head lettuce in u-board package.*

produce while it is packaged and conveyed to the retail display cases. The packaging plant operates according to daily requisitions from store managers, although due to the long package life in refrigerated storage it is not necessary that the day's packages be sold on that day.

Produce is taken from the crates, cleaned, trimmed and arranged attractively in the tray. Much of the work of trimming and cleaning is taken off the hands of the housewife. Carrot tops, for instance, are trimmed off and discarded. Cauliflower buds are removed from the stock and arranged in a tray so that the fresh white tops are visible; the tray holds all of the usable food from a head and the rest is discarded. Peppers are arranged three or four to a tray. Such items as green onions and rhubarb, suitably trimmed, are placed in long, narrow trays. Peaches, strawberries and raspberries are usually handled in the wood baskets in which they come, but overwrapped and sealed to preserve freshness for as long as four days. Even lemons are pre-packaged, a half-dozen or a dozen to a tray.

The wrapping machine is quickly adjustable for package size. It will take packages from $3^1/_8$ to $14^3/_4$ in. long, from $2^3/_4$ to $8^1/_2$ in. wide and from $^1/_2$ to $5^1/_4$ in. high. The turning of a single hand wheel adjusts the hot plates, the folders and the conveyor belt. Length of the cellophane may be adjusted while the machine is in motion and there is a choice of underfold or endfold.

One conveyor belt takes the packages into the machine and another belt brings them back out. In the case of head lettuce, boards are fed flat from a magazine at the head of the conveyor belt and set up in "*u*" shape on the belt. Lettuce is taken from the trimming table and placed by the operator on the cardboard as it moves into the wrapper; this is the only manual operation. With all other types of produce, the tray filled at the trimming table is placed directly on the conveyor belt.

At the opposite end of the machine, roll-type thermoplastic labels are being heat-sealed to the roll cellophane, spaced at proper intervals. Partially pre-printed, these labels (Fig. 10) are stamped with price information and a number, representing the day of the month, as they pass into the machine. Pre-printed information includes the A & P logotype, the brand name, "Salad Crisp," sales slogans and large-type identification of the produce, as: "Lettuce, Head." Thus, separate rolls of labels for each item packed are kept in stock on racks, along with rolls of moistureproof cellophane.

As the tray or u-board filled with produce moves into position in the center of the machine, a length of cellophane is brought down over it (Fig. 6) and held firmly on one side. The thermoplastic label is automatically spaced on the cellophane at the proper point so that it appears on the top side of the package. The package is then brought upward and the cellophane is cut off on the opposite side, folded down and around the package and gathered at the bottom. Now on the level of the upper conveyor belt, the package moves onto an electricaly controlled hot plate (Fig. 7), where the underfold —or, in some cases, an endfold—is heat-sealed in a split second. The completed package is then shoved off onto the outgoing conveyor belt, moves onto a sloping roller conveyor and thence is loaded into the special, re-usable fibreboard containers in which produce is delivered by truck to the retail stores.

At the store, the packages are simply arranged in neat rows and stacks in the refrigerated open cases—care being taken to keep the top of the stack below the refrigeration line—and reserve stock is stored below. The A & P has found it practical to use the non-refrigerated tops of the cases for display of a few items for which refrigeration is not so important—

apples, lemons, dry onions. This helps greatly to give a mass display effect.

Although no outside advertising or publicity is used to promote the packaged produce, these departments in the stores are well placarded with display signs pointing out the advantages of packaging, such as:

NO EXTRA COST	CLEAN AND SANITARY
SERVE YOURSELF	UNTOUCHED BY CUSTOMERS
ICY CRISP	FOOD VALUE SEALED IN
GOOD ICE BOX PACKAGE	RETAINS VITAMINS

One question still subject to experiment is the proper size of the package to care for most purchasers' needs. Should it be 1 lb. of string beans or $1^1/_2$ lbs.? Should packages of tomatoes be limited to two or three in winter, when they are more expensive? These questions are being determined by trial. Many products are now packaged in two sizes. Green peppers, for instance, may be had in a package of three or four.

Periodically, Dr. Hauck tests representative items for vitamin retention, acidity and sugar content, using samples of items before packaging as controls, checked against items which have been packaged for five days.

Performance of the packaging and refrigeration in preserving salability is astounding. Parsnips, for instance, which would normally become rubbery in 24 hours, are kept in top-notch condition for as long as 15 to 20 days. In a typical test it is found that such items as green beans and parsley are completely unsalable after five days when not packaged, while packaged they are still 100% salable at the end of the five-day period. Spinach, broccoli and radishes, registering zero in salability after the same period unpackaged, are 90% salable when packaged. Results of one of these periodical five-day tests are given in Table I.

It should be noted that one important factor preserving salability is that the customers cannot handle, pinch and squeeze the produce when it is packaged.

At the start of the experiment, it was a question in the minds of A & P officials whether housewives would trust and accept produce which they could not handle or examine closely. But it has been found that although a customer may be skeptical at first, she soon learns to trust the package. Two principles are of utmost importance here: (1) package with utmost care to see that no off-quality item is buried in the package, and (2) give the utmost of visibility of contents through transparent wrappings.

The average shopper will still look over the row of packages and pick out the one that looks best to her, but the amount of this handling is much less than was expected. There is seldom any burrowing to the bottom of a pile, but rather a casual examination of two or three packages from the surface layer. The lesson that packages are uniform in quality is soon learned.

Each store maintains a hand-wrapping and sealing unit in the back room to re-wrap the occasional package that may be broken in handling.

Officials connected with the experiment stress that this is a long-term project. It is a logical further development of the first attempts at non-refrigerated packaging of various items which were started, both by growers and retail stores, as long as 15 years ago. And the present project is still strictly on an experimental basis, with a number of questions still to be answered.

A & P has not been able, as yet, to determine the exact cost of the operation—although all officials seem to feel that the cost factor is favorable, especially when the operation can be extended to 10 or more stores in one city. Whether it will be applicable to smaller stores, with a smaller sales volume, remains to be seen.

It is apparent that the success of an operation depends largely on the proper supervision and training of employees and control of divers factors such as temperature, humidity, stock control, display, lighting, etc.

Research on packaging materials and methods continues. Various types of cellophane have been tried, although in general the regular moistureproof, heat-sealing cellophane has proved satisfactory. Another manufacturer of wrapping machines has become interested in building a machine adapted to this job, and his machine will be given a trial.

13—*Peppers are offered in packages of both three and four to suit the requirements of different families.*
14—*Some items like the peas shown are packaged in cellophane bags and simply sealed with cellulose tape.*

13

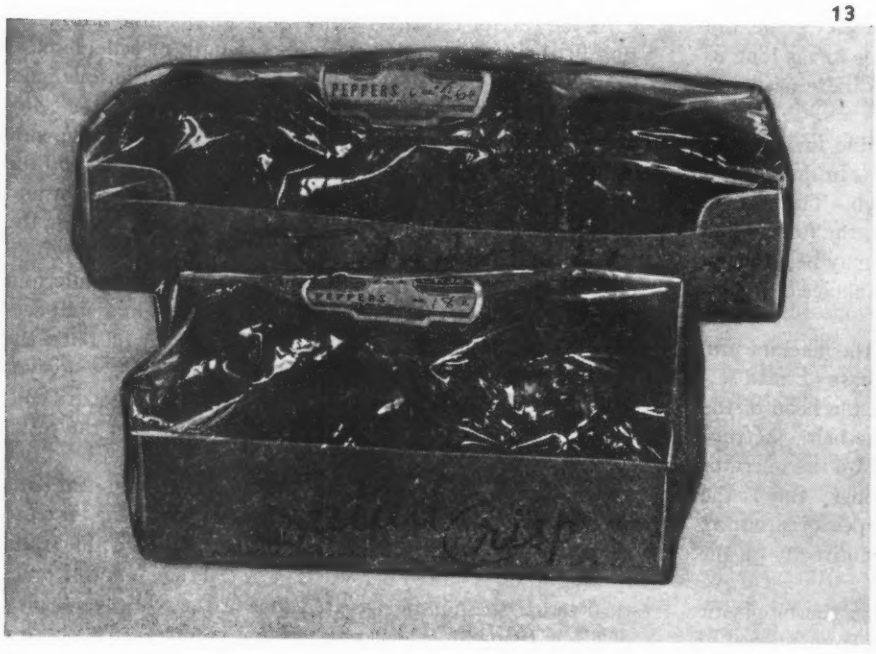

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TABLE I—COMPARISON OF SALABILITY OF PACKAGED, REFRIGERATED PRODUCE WITH NON-PACKAGED, NON-REFRIGERATED

Item	*Type of package*	*Original weight, oz.*	*Weight end of 5 days, oz.*	*Weight loss, %*	*Salability rating after 5 days, %*
Tomatoes	Packaged	11½	11½	...	100
	Non-Packaged	12	11½	.0417	50
Spinach	Packaged (semi-moistureproof cellophane)	16	15½	.0313	90
	Packaged (moisture-proof cellophane)	14	14	...	90
	Non-Packaged	17	12 (48 hrs.)	.2941	0
Peas	Packaged	16½	16½	...	100
"	Non-Packaged	18¼	12½	.3151	25
Radishes	Packaged	16	16	...	90*
"	Non-Packaged	13¼	9½ (72 hrs.)	.2830	0
Peppers (3)	Packaged	16	16	...	100
" (3)	Non-Packaged	13½	12¼	.1019	80
Broccoli	Packaged	26½	26½	...	90
"	Non-Packaged	28½	20¼	.2895	0
Parsley	Packaged	5½	5½	...	100
"	Non-Packaged	5	2½ (72 hrs.)	.50	0
Mich. Celery	Packaged	20½	20½	...	100
" "	Non-Packaged	19½	13	.3418	30
Pascal Celery	Packaged	29	29	...	100
" "	Non-Packaged	48	31½	.3438	40
Beets (tops off)	Packaged	24½	24½	...	100
" " "	Non-Packaged	25½	19	.2621	70
Cauliflower	Packaged	20½	20½	...	100
"	Non-Packaged	34½	24½	.2898	50
Head Lettuce	Packaged	15	15	...	100
" "	Non-Packaged	15¼	12½	.1803	50
Carrots	Packaged	17	17	...	100
"	Non-Packaged	18	13½	.2361	25
Brussel Sprouts	Packaged	13	13	...	80
" "	Non-Packaged	13	11¼ (3 days)	.1346	0
Green Beans	Packaged	16	16	...	100
" "	Non-Packaged	16	11¼	.2969	0
Vegettes	Packaged	11	11	...	80
"	Non-Packaged	12	11 (3 days)	.0833	50

* Radishes good, tops starting to go bad; hence only 90%.

The A & P men have learned that they do not require absolute moisture-vaporproofness for most produce items, but rather want a certain amount of "breathing" in the package to eliminate excessive condensation on the inside and consequent softening of the produce. Lemons are a problem; mold pores start cultivating on this fruit sooner than on any other item. Efforts are currently being made to overcome this with some of the recently developed mold-resistant wrapper coatings.

Condensation on the inside of the transparent wrapper has a sales disadvantage in that it impedes the customer's view of the produce and robs it of the desirable fresh, crisp look. Condensation usually occurs when the package warms up during transit from warehouse to (*Continued on page 176*)

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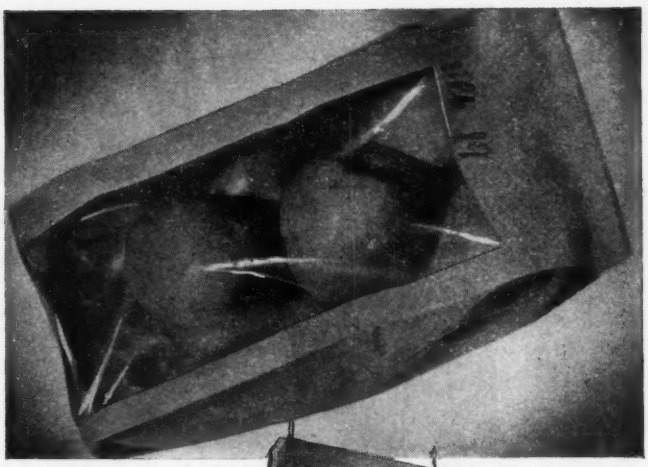

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17

PHOTOS 15, 16, AND 17 COURTESY CELANESE PLASTICS CORP.

15—*Kraft bag for apples has cellulose acetate window.* **16**—*Typical air-cargo packaging of West Coast asparagus. Air shipment holds much promise for the future.* **17**—*Predecessors of the present experiment are the acetate bags for leafy green vegetables which were used by a West Coast grower several years ago. Growers may eventually package all of their fruits and vegetables and use the refrigeration principle right from the field to the retail store.*

OFFICIAL U. S. NAVY PHOTOS

Supplies on landing craft at Iwo Jima, showing how boxes are jumbled together preparatory to landing operations. Little chance to separate boxes marked "fragile" here.

Report from the Pacific

by R. L. Van Boskirk, Washington Editor

"What we really want is a box that can be dropped from almost any height and won't break."

That statement was made partly in jest, partly in seriousness, by a supply officer while we were watching unloading operations at a comparatively small naval base where equipment was none too good. He continued:

"You see we have only limited facilities here for handling cargo and the handlers make little distinction between boxes. Even if it were marked 'fragile,' the box would get the same knocking around as any other. And if the crew knew that it contained oranges, cigarettes, candy or the like it would probably receive an extra jostle or two in the hope that its contents would be scattered on the deck or ground where they would become the objects of a wild scramble for possession."

That officer's opinion virtually sums up the attitude of nearly all supply officers in the armed forces with whom I talked on a recent tour of Pacific Navy bases. They are jealous of every cigarette, every can of food, every coil of wire, every gun or any single item that is lost or damaged. They would be intolerant of even a minus one per cent loss.

That attitude helps to explain why there was always a supply officer waiting for me at every port visited who wanted to show "that MODERN PACKAGING guy" stacks of material damaged because it was poorly packaged.

But there are few supply officers who understand packaging technique. They are only concerned with a broken box and the loss in goods represented thereby. When the wares come through in good shape little thought is given to how or why it came through safely despite all the rough handling and climatic conditions through which it may have gone.

The opinions of Navy packaging experts, sparingly scattered through the Pacific bases, are quite different from those of the supply officers. They do not expect the impossible;

Many a packaging executive, bedeviled with strict military specifications, has wished that he could see for himself just how the stuff gets through to the front —see whether those rigorous specs are really necessary. R. L. Van Boskirk, Washington Editor of MODERN PACKAGING, *has had that opportunity. He has just returned from a three-week aerial tour of Pacific battlefronts as a guest of the Navy. Here is his first hand report.*

they know that given ideal peacetime shipping conditions losses are unavoidable over even such short distances as between Washington, D. C., and Baltimore. They are disturbed, of course, when a load of dry cereal reaches its destination looking like mush or when a delicate instrument is found coated with rust, but they are more inclined to look at the total volume and feel comparatively happy if they can keep the percentage loss at a low figure. One old shipping veteran now in the Navy and with many years' experience behind him was even so bold as to venture the opinion that perhaps more material and time were used up in over-packing than was warranted by results. He felt that just plain common sense in packaging without a lot of frills would be sufficient and the resulting, slightly higher percentage loss would be more than offset by the time consumed and critical materials used up in over-packaging.

However, any such statement as that would be considered no less than treason by most other officers who are convinced that there is no such thing as over-packaging. They feel that no one can tell how much abuse any particular package will receive before it gets to the user and consequently they want it prepared to meet the impact of a fall from a cargo net, the blow of an axe, the heat of a neighboring boiler room below deck on a cargo boat, a soaking by rain or ocean water or any other of the hundred things that can happen to material headed for combat. Officers of that opinion believe that practically every container used should be constructed of the best materials yet discovered and with the most skill humanly available.

Conflicting opinions and reports on packaging performance are almost as numerous as the ships in the Pacific. That is to be expected, because conditions vary in each location. Items of the same kind are not always packed in the same way. There may be some slight difference in the type of liner, amount of silica gel used, kind of nails, omission of an important brace or alteration of any one of many packaging components so that results will be good in one case and poor in another.

Typewriters offer a good example. A quantity of them in cases had actually been buried in the mud in one of the forward bases where there was no warehouse. Rain came in never-ending volume and quantities of other materials had been piled on top of the typewriter boxes. They were dug out of the mud with spades, but when unpacked were in perfect condition and ready for use. On Guam and at a smaller island base typewriters were exhibited that showed no sign of rust or corrosion but had been severely banged up and required considerable repairing before they were usable. They had been properly packed for moisture resistance, but had been insecurely fastened and were joggled about in the container.

The typewriters dug out of the mud had been repacked in the Packaging Section of the Naval Supply Depot at Pearl Harbor. Each machine was wrapped in a metal foil, moistureproof wrapper, placed in a wooden case with a 60-60-60 waterproof bag liner and securely bolted through the bottom. The wooden washers used with the bolts were waterproofed with a soft, hot-dip wax and an asphalt adhesive. Silica gel was placed within the container. A Style 2 box was used as a replacement for the formerly used Style 4 because Style 2 carries cross members or braces at the top and bottom of the ends and gives added strength. The Navy is partial to the Style 2 box and is recommending its use whenever possible simply because of those extra braces.

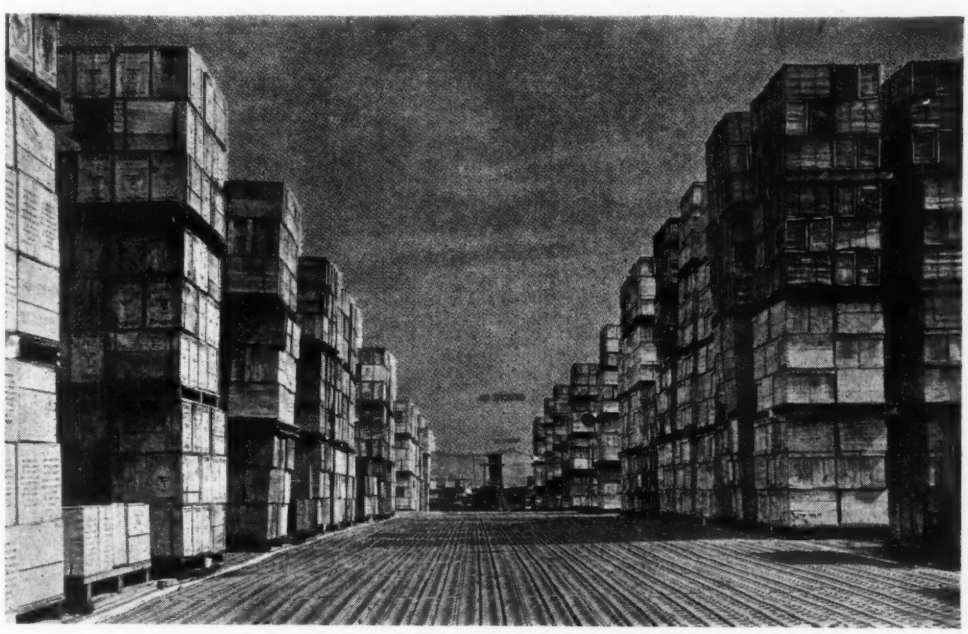
Perhaps the most disturbing factor in this dispute over the quality of overseas packaging is that the armed forces and civilian contractors do know how to ship materials so that they will go through in practically perfect condition. It is almost impossible to find spoiled wares in properly prepared containers. Another example illustrates the point:

A naval supply officer on Guam was waiting as usual for "that MODERN PACKAGING guy." He wanted to show me eight or ten truck loads of damaged food supplies of which they were trying to salvage a small part. "You've come at just the right time," he said. "We probably lose enough spoiled goods to feed the whole damn Jap army. Look at all this stuff!"

I looked. Far more than half of it was canned milk. Cans were broken with fluid oozing out. Sticky labels were all over the place. Sailors were going over it, can by can, and occasionally finding one that could be used.

The cans were packed in ordinary corrugated board boxes with a single strap around them. They were packed for domestic commercial shipping. In the same consignment was an occasional gallon glass jar that once contained vinegar.[1] They had been shipped in ordinary commercial corru-

[1] Gallon glass containers for vinegar have been discontinued by the Navy.



Oil stored in the open. No strapping is used for pallets. Illustrates good stowage with weight evenly distributed. Arrangement is neat and planned so it is well aerated.

gated containers without even interior packing to protect them. Another fraction of the consignment was dry cereal that had become water soaked and the contents were like mush. Toilet paper had become thoroughly saturated with water and looked unsalvageable. The whole thing made one grand mess—no one could blame the supply officer for being disgusted. There wasn't a box in that display that wasn't broken and its contents spilling out.

There was almost no complaint about goods shipped in V-boxes. That's the queer part of this story. When the armed forces know that V-boxes do the job, why do they permit shipments to go through in ordinary commercial or corrugated boxes? Since returning to the States, I have learned that the Navy has been holding classes to instruct its thousands of inspectors in packaging specs. Formerly the inspectors were chiefly concerned with the product itself and sometimes ignored packaging requirements.

The development and use of the V-box are one of the top-notch success stories in the packaging history of this war. The packaging officer at Pearl Harbor said his only complaint on V-board was that he couldn't get any and it was sorely needed in his re-packaging operations. Most of those using V-boxes prefer sleeves and double strapping, but admit that in a few instances the sleeves might be eliminated. Strangely enough, glass seems to go through in good shape in a V-box without a sleeve but must be well strapped. Cola beverages and beer packed in either sawdust or with corrugated separators arrive at Pacific bases with small loss except in instances where they are dropped from a net or when a truck goes off the road and practically the entire load is lost.

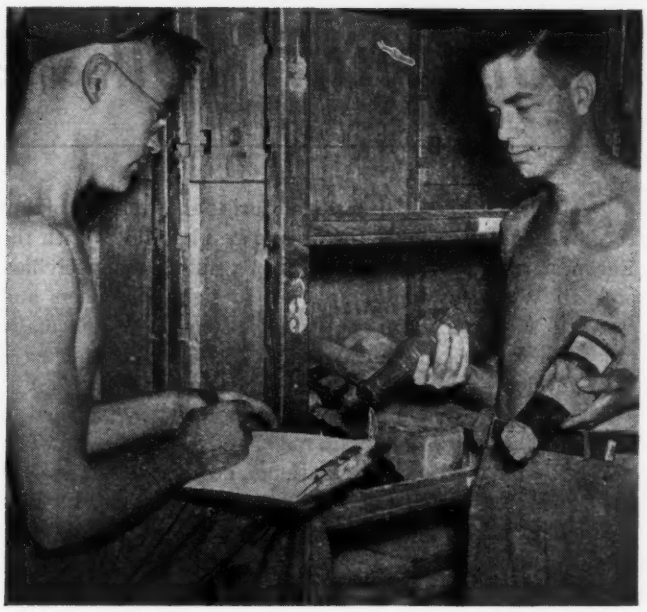
Another example of glass is electric light bulbs. At the beginning of the war more than 50% of those shipped from the United States to Hawaii were broken, according to one officer. But properly packed in V-boxes losses are practically eliminated.

It is difficult to make statements about any type of packaging in the Pacific without a long qualifying sentence about varying circumstances. Here is a good example: When materials are unpacked on shipboard while the ship is in a battle area, the containers must be disposed of. Large ships have incinerators in which they may be burned, but smaller ships, of which there are many thousands, must dump the containers overboard and possibly betray their position to the enemy by a trail of floating wooden boxes. But empty V-boxes can be easily broken down, tied together, weighted and sunk, thus removing visible evidence of the ship's location. They can also be broken down and stowed if space permits. Thus small ships prefer V-boxes.

It is no secret that the Army and Navy are moving out of their old South Pacific bases such as Guadalcanal and turning them over to the Australians. Material from there is being transferred to the Philippines and more northerly Pacific bases such as Guam. Other material is being moved up closer to the front from what were once advance bases such as Tarawa and Eniwetok. Some of those supplies have been out in the open or at least covered only with tarpaulins for many, many months. They have been subjected to almost constant drizzle or rain, salt spray, intense humidity and terrific heat. Furthermore, many of those supplies had been packaged before the Navy or its contractors had learned the technique of tropical packaging. There was the example of the diesel engine which when taken out of its box was covered with a thick coating of rust all over its lower half. But it had been moved around from spot to spot and when finally opened was virtually sitting in a bucket of water. The wooden case had a waterproof liner, but it had been punctured and the box became a pail. Since that engine was shipped the Navy has developed a draining and ventilating system to prevent such accidents to large crated objects by boring groups of five holes at various positions in the crate and equipping them with screen and baffles which prevent infiltration of sand or rain. Exhibits such as these are frequently on hand as horrible examples, but right alongside them will be warehouse after warehouse of packaged goods

A bit of cheer for boys on ships long at sea. This 200-lb. replenishment package may be hoisted over to any ship whose stores are depleted to tide it over until it reaches port. Clothing is sent similarly in another box, both "kits" carried on oilers that service the ships in the fleet.

Miscellaneous packaged items are stored in bins at an advance Naval base construction depot in the Marianas.



Two types of packages for identical parts at Seabee depot; one with strip coating; the other with protective papers.

without a damaged or broken container in the whole lot.

It is, in fact, quite amazing to see some of these old supplies coming through as well as they do. An officer pointed out a wooden box full of a Hormel meat product of some sort, not Spam, which was more than three years old and had been in Guadalcanal for many, many months before shipment to Guam. He said it was in perfect condition and pointed to the coating on the cans as the probable answer. It was not pro-coating, but a yellowish, brassy-looking film that looked as though it might be prewar vintage. With that introduction it was easy to get him to give an opinion on pro-coating.

"Pro-coating is the biggest thing yet in packaging," he said, "pro-coating and good packing will save millions of dollars and thousands of hours of labor. When used with this new type, specially sealed, round-ended cans like that milk is packed in, I guess it's as perfect as you could expect."

He told of a K Ration box that had been dug up after it had lain under ground for six or seven months. When it was handled practically everything disintegrated except the small individual pro-coated cans, which were still in perfect condition. Ration packaging as a whole has been satisfactory.

Shipment of dry or powdery foods in multiwall sacks is another successful packaging innovation of this war, although sugar seems to be preferred in 100-lb. burlap sacks because it is easier to palletize or handle than when in the larger, stiffer bags. There was general complaint about flour becoming weevily and such things as salt and soap chips caked into great chunks because of the humidity, but the cooks impishly reported that the weevils could be sifted out and the salt could be broken up with a hammer.

One of the most surprising observations of the entire trip was the speed and perfection with which refrigerated meats are shipped across the Pacific. Although there is not enough fresh meat to feed the men three times a day they certainly get far more of it in their diet than civilians are receiving today and it reaches their kitchens in excellent condition. Butter is plentiful and fresh eggs are no rarity to men in the Pacific areas. There are a few fresh vegetables except lettuce, celery and cabbage, none of which come through as satisfactorily as meat and dairy products. Vegetables and fruits, such as apples and oranges, are shipped in ordinary commercial containers with no more than 50 to 70 lbs. in a crate so that they can be handled easily and are kept in coolers with a temperature of from 35 to 40 degrees both on refrigerator ships and in refrigerators on shore. The outer leaves are badly wilted when they reach the kitchens and the vegetables in general have a flat taste when served. Potatoes are now shipped on deck in octagonal crates since it has been discovered that they ship better that way than when cooled and then exposed to tropical heat.

Fresh meats, including chicken, are packed in either wooden or commercial fibreboard boxes and strapped or wired. The temperature is maintained at between 5 and 17 degrees. They are packaged practically the same as though they were being shipped from Chicago to New York. Butter and eggs are handled the same as meat.

A few of the refrigeration sections are devoted to the stowage of cheese and quick-frozen fruits such as cranberries, cherries, vegetables, strawberries and practically all other fruits. These are very special. They are reserved especially for hospitals and submarine crews. There is neither production nor space enough to provide them for all branches of the service. The frozen foods are packed identically the same as for domestic use. The cheese is packed in a solid fibre box (not a V-box) but with tape-sealed seams and stowed with air space around each box.

In April there was enough portable refrigerator space on Guam to care for a city the size of Salt Lake City and more units were being added. Personnel was capable of unloading a cargo refrigerator ship in from 30 to 72 hrs., depending upon its size, while at the same time the men would keep up their regular chores of issuing to base establishments and to all the ships in the harbor which were provisioning in preparation for a sea journey. A battleship, for example, would require from 60 to 90 tons of fresh provisions in its refrigerators before leaving for a mission that might keep it at sea for a month with no chance to take on fresh supplies.

The care and shipment of metal parts is another great Navy task that has not yet reached perfection, but has shown rapid improvement over the (*Continued on page 172*)

Aluminum foil *on postwar production lines*

Of all the materials critical during the war, aluminum should be among the first to be plentiful. With the European war over, mills are already filling many civilian orders. With this bright prospect in sight, producers and converters of aluminum are calling attention to the many improved packaging applications of aluminum foil that have been developed as a result of war packaging problems.

Prior to the war, foil packaging was previously confined to the simple application of plain foil or foil laminations. The war has developed new laminations and methods of sealing foil which have increased its protective qualities and its uses. A familiar pre-war package that led the way to this development was the packet for Lipton's Continental dehydrated soup. This package and the method of making "face to face" sealed bags, it is said, has been the starting point for practically all of the war packaging materials composed of kraft, foil and cellophane, as well as the foil combinations used for Method II packaging. Although the same degree of protection may not be required for the majority of future civilian requirements, producers and converters of foil have been directing their efforts toward the production of foil combinations which will emulate the protective requirements of the wartime packaging at less cost and in forms that can be handled in normal packaging operations.

Packages made from some of these materials are already in actual use; others are in the experimental stage but show good possibilities for easy handling on existing packaging equipment.

Foil-wax-paper laminations

One of these materials which may offer the future packager an excellent protective medium with heat-sealing properties is comprised of a thin sheet of protective metal aluminum foil firmly cemented to a supporting "multi-ply" structure of

New developments in foil suggest many new uses for the future. Laminated aluminum foil and vinyl film for a bandage wrap withstand sterilization process. Sardik dehydrated tomato mix is packaged in heat-sealed foil envelopes. Heat-sealed bags of foil-wax-paper combination, like this one used for Charms candies, may be produced on several types of bag forming machines that normally handle thermoplastic materials. Scissors and razor blade packages illustrate use of foil for preservation packaging. Plain foil wrap protects 5-cent Beechnut hard candy assortment. Maca yeast wrap is made from rotogravure printed foil in roll form, automatically packaged with electric-eye cut-off registration.

paper and wax. The aluminum foil is first laminated to a base paper with glue adhesive to insure a permanent bond. Then amorphous wax (microcrystalline) is applied to the base paper which in turn becomes the carrier of a light weight porous tissue covering the wax. When heat is applied to the foil surface the wax bleeds through the porous tissue and effects a seal against itself or against the exposed foil surface. The fibres of the porous tissue become imbedded in the seal and, it is said, strengthen considerably the seal over a seal obtained with plain wax. The reinforcement of the foil with the paper lamination increases tensile strength of the foil, makes it resistent to metal cracks or scuffing tears, and eliminates the possibility of any "pinholes." The paper fibres also support and reinforce the protective wax films and give the film greater folding endurance.

Introduction of microcrystalline wax in this application as a sealing agent eliminates the tackiness of such waxes if used as a surface coating, yet provides the foil lamination with all the useful properties characteristic of such blends of waxes.

This foil combination has already been accepted as a Government specification in several applications.

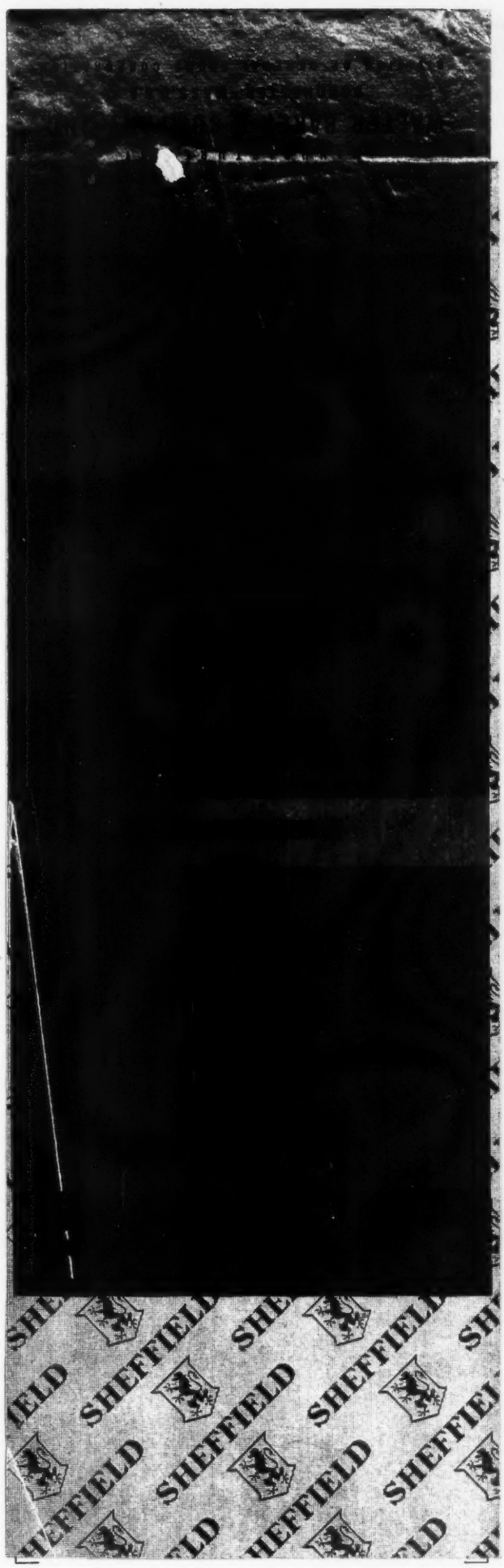
An interesting application is an overwrap used by the Charms Co. for a carton holding twenty 5-cent Charms packages. The material is used with the paper printed on the outside with the foil on the inside. This overwrap is applied by means of a standard heat-sealing wrapping machine, formerly used for applying waxed paper.

This same foil, wax and paper combination has been used as a tea-carton lining produced on a standard carton lining machine using the foil as an inner liner, heat-sealed. Satisfactory tests have been made on a smaller package of a similar type for the packaging of dehydrated soup. Dehydrated compressed soup, produced by Maguire Industries for shipment to Italy and Poland for relief feeding, is using this foil, wax and paper lamination for packaging, produced on an automatic heat-sealing machine at the normal rate of speed.

Cough drops normally packaged in a carton with wax paper liner have also been mechanically produced using the foil combination with excellent results.

A variation of the same material has been produced as a new material for the packaging of K Rations. In this case the material is a combination of 0.0007 in. aluminum foil mounted with a waterproof glue to 25-lb. kraft. On both surfaces of this lamination are applied a heavy coating of amorphous wax and a porous tissue overcoat. Because of the heavy content of wax on both surfaces when heat is applied there is sufficient wax flow to completely fill up all channels formed in the end folds of the package. The moisture-vapor protection of this combination, it is said, is equal to that of a laminated kraft-foil and cellophane combination, but the price is about one-half of the latter. Furthermore, the package may be assembled successfully on a high-speed automatic machine rather than manually as is necessary with the heavier laminated material.

The foil-paper-wax combination is said to operate well in several different types of bag forming machines which normally use thermoplastic materials. The bag of Charms hard candy shown in the illustration was produced in this



At right, an actual sample of Baker's chocolate wrap, rotogravure printed roll stock, laminated foil and paper. Sheffield sample is example of foil-wax-paper lamination whose sealing surface will heat-seal either to foil surface or to itself when heat is applied to it.

same manner on a machine which makes a face-to-face seal.

The heavier type of lamination used for the K-Ration application, incorporating the double-wax sealing feature, has been successfully made into bags with an overlapping heat-seal joint in the back and sealed with heat at the bottom.

Sterilized bandage wrap

The Army's requirement of a special bandage pack for the treatment of burns lead to other developments in aluminum foil packaging. This bandage was saturated with liquid petrolatum and required sterilization in an autoclave at 250 deg. F. for 30 minutes. Existing materials would not withstand this sterilization process. A satisfactory wrap, however, was produced by means of a lamination of vinyl film with aluminum foil. Neither of these two materials by itself would have solved the problem, but in combination they appear to have many applications in medicinal and food fields.

Foil tight wraps

Foil tight wraps have the advantage of not only eye appeal but moisture protection. Perhaps one of the best known uses of a foil tight wrap is the Sunsweet Prune package. This product requires retention of 5% added moisture and the California Prune Packers Assn. has used foil to accomplish this. Tight wraps have previously been relatively expensive and limited in their application but improved methods of production should put them within a price range that they may be used on packages for such products as cereals, baking mixes and other hygroscopic products.

Gravure printed foil in rolls

Rotogravure printed foil in roll form for automatic packaging with electric-eye, cut-off registration will also find a wider acceptance in the future. Illustrated is an example of Maca Yeast packaged automatically from roll-form rotogravure foil. Chewing gum and many other products which require small packages might be handled in this manner. Several machines equipped to handle continuous roll feed may be adapted to this purpose. However, there are cases in which machinery cannot be converted and if a user intends to use foil or, indeed, any opaque packaging film, he should take such factors into consideration when new machinery is designed. For example, recently a machine manufacturer of smoking tobacco wished to adopt the foil-paper-wax combination to a small tobacco package. This company had been using an inner paper liner, a printed cup and a cellophane overwrap. They wanted to use an inner paper liner for support and one gravure printed foil wrap in place of the other two materials. Unfortunately the machines they had been using for the cellophane wrap could not be changed over for use of gravure printed electric-eye registration roll stock.

Prior to the war it had been (*Continued on page 174*)

Tea carton is foil laminated to paperboard. The protective overwrap for twenty 5-cent Charms packages of laminated foil and paper is used with printed paper side out. Sunsweet prune package shows a printed foil tight-wrap. Wound tablet package illustrates a war development of face-to-face sealed packet of foil-kraft-cellophane combination. Foil combinations will be used widely for small unit packages such as those shown here for coffee and drugs.

No bigger than a thumbnail is the molded phenolic vial, with wax-dipped metal closure, found suitable for Bursoline and Halazone and recently adopted for salt tablets.

Phenolic vials solve a QM problem

*by Lt. Robert de S. Couch**

There was a time when the American soldier had to drink his water as he found it, unless he was in an area where it could be purified by an engineering unit. Drinking water which had not been purified often resulted in sickness.

Today when the supply lines are functioning properly the combat soldier receives a bottle containing 100 water purification tablets every ten days. These tablets are used by the soldier for purifying his drinking water when he is unable to obtain water which has been chemically purified by the engineers.

In June of 1944, the Military Planning Division of the Office of the Quartermaster General felt that the problem of supplying water purification tablets could be simplified if they were included in the combat rations. They therefore requested that a method for packaging these tablets be developed so that they might be included in the C and K Rations.

The Halazone tablet was the only type of water purification tablet issued and it was packaged in a glass bottle with a metal or plastic screw cap. During the spring of 1944 considerable experimental work was done on the development of a new tablet called Bursoline, which was considered as a possible replacement for the Halazone tablet since Halazone adds an off-taste to the water. The Bursoline tablet, which contains iodine, is not as stable as the Halazone tablet, and, therefore, requires the best possible type of packaging. Since the Bursoline tablet might replace the Halazone tablet, it was felt that a package should be developed which would adequately protect both types of water purification tablets.

The purifying agent in the Halazone tablet is free chlorine. The Bursoline tablet obtains its purifying powers from iodine. Both free chlorine and iodine, which are in the halogen series, are very difficult to package because they are very active and will react with most materials used for packaging purposes.

The problem was first attacked by trying to obtain a glass bottle which would hold 12 tablets of Halazone or 8 tablets of Bursoline. In order to include a bottle of water purification tablets in the K Ration without changing the dimensions of the ration box, it was necessary to obtain a bottle with outside dimensions not exceeding $^5/_8$ in. in diameter and $1^1/_4$ in. in length.

To simplify the procurement problem, all the bottles were to be of the same size for both C and K Rations. The allotment for the C Ration was to be filled first and after production increased enough to fill C requirements, the K Ration would get the supply. A bottle of this size was obtained in limited quantity and the Halazone tablets were immediately included in the Accessory Packet of the C Ration.[1] Unfortunately, the availability of this size bottle was limited to about 50% of the requirements for C Ration. In order to fill the requirements, it was necessary to use bottles and vials in a variety of shapes and sizes.

Fortunately, the specification on the size of the bottle to be included in the C Ration was not as rigid as the one to be included in the K Ration. However, when a bottle was used which exceeded the specified size, it was difficult to handle in the assembly of the C Ration Accessory Kit and it did not improve the keeping quality of the Halazone since the larger size bottles provided a great deal of unnecessary headspace.

Because of inadequate supply of bottles of the proper size, flexible packages of the fin-seal variety, constructed from various packaging materials, were tried. These packages failed. If the packaging material was water-vaporproof enough to protect the tablet, the chlorine or iodine reacted with the film and ruined the package.

Anodized and lacquered aluminum vials and caps were tried. It was necessary to obtain a very tight closure when using this material since aluminum reacts with the iodine and

* Quartermaster Corps Subsistence Research & Development Laboratory, Chicago.

[1] See "Ration Packs," MODERN PACKAGING, Nov. '44, p. 90.

Halazone tablets contain free chlorine. They were packaged successfully in these 1 1/8-in. glass bottles with wax-dipped closures, but bottle could not be produced in sufficiently large quantities.

The phenolic vial was then developed to hold 12 Halazone or 8 Bursoline tablets. The height of the vial is 1 in.

chlorine gases in the presence of moisture. Succeeding trials of aluminum proved it to be inadequate.

The above experiences left one field of packaging materials untouched—namely, plastics. If a plastic material could be found which was water-vaporproof and inert to chlorine and iodine in the presence of moisture, the problem would be solved because the plastic could be molded to desired dimensions. Thermoplastics such as cellulose acetate, which had been used by the Medical Corps, and polystyrene were first investigated.

Storage tests were run at 100 deg. F. and 90% relative humidity; 100 deg. F. and 40% relative humidity, and room temperature. Although the vial or bottle of water purification tablets was going to be placed in the ration package, which is very water-vapor resistant, there is the possibility of the ration packages picking up some moisture during longer periods of storage—as long as two years in a Pacific "dump." Consequently, it was decided to include the severe testing conditions of 100 deg. F. and 90% relative humidity in order to obtain the results of storage tests in a short time. The control tests consisted of storing the tablets in small glass bottles under the same conditions. The tablets in the various containers were analyzed for chlorine and iodine content periodically and the results interpreted as per cent chlorine or iodine.

The cellulose acetate and polystyrene vials provided a fair amount of protection when stored at 100 deg. F. and 40% relative humidity but neither one (particularly cellulose acetate) provided sufficient protection when stored at 100 deg. F. and 90% relative humidity.

Because of the failure of polystyrene and cellulose acetate to provide the desired protection and because of the inadequate supply of other thermoplastics, it was decided to investigate the thermosetting phenolic resins. The results of the initial tests immediately indicated that the phenolic resins would probably provide the desired protection. The first tests were made on plastic vials which had their screw cap closures coated with wax, thereby limiting the water vapor pick-up to the body of the vial.

A series of vials made from different phenolic resins was immediately tested in comparison with small glass bottles of equal size. It became apparent as the tests progressed that the chief failure was in the closure, both in the plastic vial and the glass bottle. A container with a reclosable feature was necessary because each container held enough tablets to purify three canteen cups of water, which meant that the tablets would not all be consumed at one time.

Lacquered metal caps lined with a waxed vinylite facing with a pulp backing were used for both the glass bottles and plastic vials. In order to determine the loss of protection due to poor closures, duplicate sets of vials and glass bottles were stored at 100 deg. F. and 90% relative humidity. One of the two sets had its closures dipped in microcrystalline wax. The results of the tests are shown in Tables I and III and the

TABLE I—HALAZONE TABLETS—(STORED AT 100° F. AND 90% R.H.)

Container	*Average per cent chlorine in tablets*				
	Start	*2 Weeks*	*4 Weeks*	*6 Weeks*	*7 Weeks*
Glass Bottle, Metal Cap	1.8	1.5	0.6	0.3	...
Glass Bottle, Metal Cap, Wax-Dipped Closure	1.8	1.8	1.7	1.8	...
Durez 76, Metal Cap	1.8	1.7	1.4	0.9	...
Durez 75, Metal Cap, Wax-Dipped Closure	1.8	1.8	1.6	1.3	...
Durez 43-47, Metal Cap	1.8	1.6	1.6	...	0.8
Durite 539, Metal Cap	1.8	1.6	1.4	...	0.8

TABLE II—HALAZONE TABLETS—(STORED AT 100° F. AND 40% R.H.)

Containers	*Average per cent chlorine in tablets*			
	Start	*2 Weeks*	*4 Weeks*	*6 Weeks*
Glass Bottle, Metal Cap	1.8	1.9	1.8	1.8
Durez 75, Metal Cap	1.8	1.9	1.8	1.5
Durez 43-37, Metal Cap	1.8	1.8	1.9	1.6
Durite 539, Metal Cap	1.8	1.8	1.7	1.3

TABLE III—BURSOLINE TABLETS—(STORED AT 100° F. AND 90% R.H.)

Container	*Average per cent iodine in tablets*			
	Start	*2 Weeks*	*4 Weeks*	*6 Weeks*
Glass Bottle, Metal Cap	7.5	6.2	4.4	2.8
Glass Bottle, Metal Cap, Wax-Dipped Closure	7.5	7.1	7.2	6.9
Durez 75, Metal Cap	7.5	6.6	5.6	4.5
Durez 75, Metal Cap, Wax-Dipped Closure	7.5	6.9	6.5	5.6
Durez 43-37, Metal Cap	7.5	6.6	5.6	3.0
Durite 539, Metal Cap	7.5	6.6	6.0	4.4

TABLE IV—BURSOLINE TABLETS—(STORED AT 100° F. AND 40% R.H.)

Container	*Average per cent iodine in tablets*			
	Start	*2 Weeks*	*4 Weeks*	*6 Weeks*
Durez 75, Metal Cap	7.5	6.9	7.0	7.0
Durez 43-37, Metal Cap	7.5	7.0	7.0	7.0
Durite 539, Metal Cap	7.5	7.1	6.9	7.0

vials with and without wax-dipped closures are illustrated. Tables II and IV give additional data at 100 deg. F. and 40% relative humidity.

Tables I and III indicate that if the plastic vials are subjected to severe heat and humidity they will provide as much protection as the glass bottles. Since the plastic vials are packaged inside the ration containers they will be subjected to high temperature but not high humidities and the results shown in Tables II and IV illustrate this condition. Storage studies of the Ten-in-One Ration, which contains Halazone tablets in glass, at 100 deg. F. and 90% relative humidity for a period of six months have shown that the Halazone tablets do not lose their chlorine potency. It would seem fair to assume, therefore, that if the plastic vials equaled the protection of the glass bottles in a short severe test they would provide enough protection under overseas storage conditions.

Aside from the study of plastic vs. glass, an interesting feature of these results is the significant increase in protection provided by the waxed closure in comparison to the unwaxed.

As was stated before, the vials or bottles were to be placed in the K Ration waxed carton, which is very water-vapor resistant in itself, or the C Ration Accessory Kit, which is made from foil, also water-vaporproof. In view of this fact and the results of the above tests, it was felt that the phenolic resins Durez 75 and 43-37 and Durite 539 would provide the desired protection for Halazone or Bursoline tablets if either were to be included in the C or K Rations.

By the time the tests were completed, evidence from overseas indicated that the supply lines were functioning sufficiently well to provide the soldiers with purified water and it was, therefore, decided that it would not be necessary to package water purification tablets in the C and K Rations. However, there had been an increasing demand to include salt tablets in the C and K Rations to combat heat exhaustion which was being encountered in the war in the Pacific. The salt tablets did not present as difficult a packaging problem as the Halazone and Bursoline tablets and the plastic vials provided ample water-vapor protection.

By increasing the height of the plastic vials from 1 in., the height of the test vials, to $1^1/_6$ in., the vial would hold four 10-grain salt tablets, the desired quantity. Production started and today all K and C Rations contain a vial of four tablets.

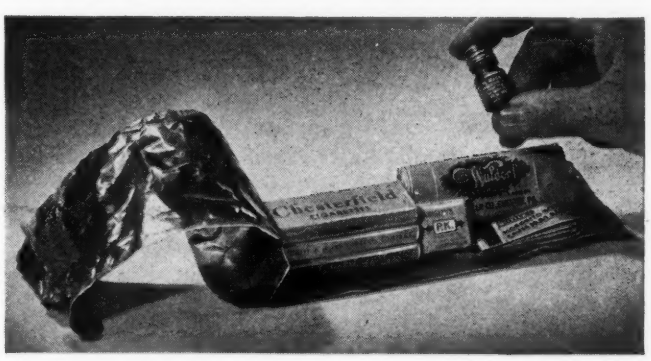
If in the future there is again a demand for including water purification tablets in combat rations or survival rations, there will be suitable materials available for making containers of any desired size.

This work has demonstrated that it is possible to use plastics in an entirely new field of packaging. Undoubtedly, they will be the answer to many unsolved problems of the future.

CREDITS: *Plastic vials molded by Owens-Illinois Glass Co. Assembled salt containers by Empire Findings Co. Glassvials by T. C. Wheaton Co. Bottle caps by Ferdinand Gutmann.*

The phenolic vial, containing 4 salt tablets, is now one of the components of the compact K Ration package.

Glass vials formerly included in C Ration Accessory Kit.



Progress in glass . . . the lightweighting trend

by Howard Trumbull*

Showing progressives stages in the lightening of the vacuum coffee jar. Jar at the far left, used in 1934, weighed 24 oz. Current model shown at far right weighs 12.5 oz.—a total saving of 48% in weight.

Research specialists in glass are still not convinced that they have reached the ultimate in reducing weight and at the same time increasing the strength of the glass container.

They point out that glass is actually lighter than aluminum, the specific gravity of aluminum being 2.7 while that of glass is 2.5. Progress which has been made since the middle '30's in lightweighting by better structural utilization of glass throughout the walls of the container is visual evidence that continued progress may be expected. Glass, according to U. S. Department of Commerce statistics, during the last four years has shown the greatest percentage of growth of all consumer container materials.

Starting with the legendary discovery of glass by a band of Phoenician sailors, as described by the Roman historian Pliny, the glass container industry may be divided for purposes of study and comparison into three basic eras or periods.

The first period, which started 5,000 or more years ago, saw the glass industry remain in a more or less dormant state until the beginning of the present century. True, some changes and improvements were made during this first era. The discovery of the metal tube or "blowpipe" for forming hollow objects was a tremendous forward step, as was the use of molds for forming the blown glass into identical shapes. The transparent Venetian "cristallo" of the 16th Century, which was capable of being blown to extreme thinness and worked into any form, was another high point in the history of glassmaking.

Basically, however, the manufacture of glass containers, with some slight modifications, remained much the same for many centuries.

At the start of the present century, Michael J. Owens developed an idea which he had long entertained for automatic glassblowing. This machine reproduced mechanically the various steps taken by the craftsman in the making of a single glass container—the gathering of the molten glass on the end of the blowpipe, the lowering of the "gob" of hot glass into a mold, the blowing of air through the pipe to form a container at the end of the blowpipe.

Michael Owens' machine was perhaps the most important development in 5,000 years of glass history. It made possible production of glass containers in the quantity needed to package food, drugs, household products, beverages and other essentials of modern living.

The middle '30's marked the beginning of the third era in the glass container industry. About this time, efforts to reduce weight in containers while at the same time increasing strength began to bear results. Lighter and stronger containers opened up vast new fields of possibilities in the packaging industry. More and more products appeared on the markets in transparent packages, their visibility providing greater customer appeal.

Before the third glass era could really get under way, considerable additional research was necessary. Glass container manufacturers had to learn more about their material. Although glassmaking is actually one of the oldest crafts, much of the real science of glass container manufacture dates back but a few years. Today glass container manufacturing incorporates methods of quality control, design principles and economies which were considered impossible even a decade ago.

In basic research, the study of glass at high temperatures was a difficult problem. For this purpose the Owens-Illinois Glass Co. developed a device which has become known in its laboratories as the "viscometer."

In order to produce lighter and stronger glass containers, it was necessary to know the fluidity of glass of varying compositions and at varying temperatures. The "viscometer" provided the answer.

There is in the Owens-Illinois research laboratory another

* Sales Promotion Manager, Owens-Illinois Glass Co., Toledo, O.

apparatus that resembles one of Rube Goldberg's more fantastic creations. By means of this maze of bent glass tubing, mercury valves and the generous use of thermos bottles, liquid air and dry ice, analysis is made of the gases dissolved in the peculiar substance of glass.

Hand in hand with the extensive research in glass, there has been continued extensive study of closures, which has been responsible for many developments in this field.

This long-range planning and patient research have opened up new avenues in the use of glass containers. Both the packer and the retail merchandiser have benefited. These benefits will continue to multiply as developments continue.

All during the last decade, and particularly since 1937, concentrated efforts have been made to eliminate weight in containers while at the same time increasing their strength. Examples of this are many.

The vacuum coffee jar of 1934 weighed 24 oz. By 1941 weight of the container had been reduced to $13^1/_2$ oz., or a weight reduction of 43.7%. Through additional reductions in weight the vacuum coffee jar in 1945 will weigh but 11.75 oz.—a net reduction of 51% since 1934.

The average weight of the typical 1-lb. preserve jar of 1940 was $9^1/_4$ oz., whereas the average weight of the present jar is $6^1/_4$ oz. The glass weight has been reduced by 32.4%.

The 12-oz. returnable beer bottle of the past weighed 16 oz. Breweries report that some of these heavy bottles of 25 to 30 years ago still come back to them. By 1933 the weight of the bottle had been reduced to 14 oz. and by 1935 to 13 oz. At the present time the standard returnable bottle weighs but 12 oz., a reduction of 25%.

The one-trip beer bottle used at the present time for the shipment of beer to the armed forces overseas weighs $7^3/_6$ oz. Still further advances have been made in a one-trip bottle ready for introduction to the civilian market. The latest design of this bottle weighs about $6^1/_2$ oz., or slightly more than half as much as the standard returnable bottle. These weight reductions have been accomplished without reduction in capacity, which remains 12 fl. oz.

Similar reductions in weight have taken place in other fields of glass packaging. Containers for vegetables and fruits, for example, have undergone reductions totaling 49.2% in weight since 1936.

The rough treatment given overseas war shipments has often been cited as an example of extreme harshness, yet lightweight glass containers have weathered the test. From plasma to beer, from hospital supplies to condiments, from mosquito lotion to dishes—glass has gone all the way to combat. Usually wherever hospital purity or extreme corrosion resistance is demanded, glass is used.

A typical report on a war shipment in glass shows loss of only two bottles in 27,000 cases; another, 27 bottles in 60,000 cases—these on shipments traveling 9,000 miles. In the case of the lightweight, one-trip beer bottle, reports to the industry reveal that fewer than one in 50,000 bottles has failed to arrive in good condition.

In spite of mounting costs in packers' plants for labor, raw materials and other supplies, and with more and more untrained and unskilled labor entering into all phases of production, the cost of packaging in glass has been held down by higher speeds of operation, easier handling, smaller losses and other benefits through use of lightweight, standardized glass containers.

Much of the increased efficiency with which glass containers are handled through the packing line has been possible with but minor changes and adjustment in equipment already installed for other types of packaging. In addition, glass container technicians have conceived and in some instances built equipment for packers' plants to demonstrate the increased speed and efficiency with which glass containers may be used.

Further improvements in the handling of glass are being made constantly, but have been retarded by war priorities and shortages. Glass is now being handled in many plants at speeds and costs comparable to those of any other packaging material.

Probably the most obvious saving brought about by the reduction in weight of glass containers has been in shipping costs.

The quart juice bottle formerly in use weighed $23^1/_2$ oz., while the present standard bottle of the same capacity has been reduced to 16 oz. On one gross of bottles, the saving in weight of glass alone would amount to $67^1/_2$ lbs. Assuming, for the purpose of carrying this comparison still further, that 2,500 cases, each case containing one dozen bottles, are packed in a freight car, this would mean a saving of $14{,}062^1/_2$ lbs. on a single car load of containers. If the shipping charge on these containers is figured at 50 cents per 100 lbs., the saving in terms of actual cash would amount to approximately $70.

The earlier models of the 1-lb. vegetable jar weighed $13^1/_8$ oz. The present containers weigh but $6^1/_4$ oz.—a total reduction of $6^7/_8$ oz. The saving on 1,000 of these jars amounts to $429^7/_{10}$ lbs.

Another good example is the catsup bottle. The earlier, long-necked bottle weighed $13^5/_8$ oz. The present bottle weighs but $9^3/_4$ oz.—a saving of $3^7/_8$ oz. The saving in

Modern design saves housewife as much as 50% in storage space in the case of the new square milk bottle.

weight on 1,000 bottles would amount to more than 242 lbs.

It should be borne in mind that these savings in shipping weight take into consideration only the reductions in the weights of the containers themselves. They do not take into account the savings made possible through reduction in size and weight of shipping cases resulting from the change in design of containers through lightweighting.

Lightweight glass containers invariably are simplified designs and, therefore, occupy the minimum space for the cubic contents. As a result, shipping cartons for standard containers almost always represent a considerable saving of paperboard as compared with cartons used for many types of "private mold" containers of the same capacity.

For example, in the case of the 1-lb. preserve jar, the boxboard saving in one instance was found to be 17% per gross of jars. In another instance, with the same type of jar, a saving of 13% resulted. Economies have been most marked in certain types of bottles which formerly had long, slender necks. When two salad dressing bottles were exchanged for the lightweight, stubby bottles a 19% paper saving of boxboard was made in one instance and a 27% saving of paper was made in the other.

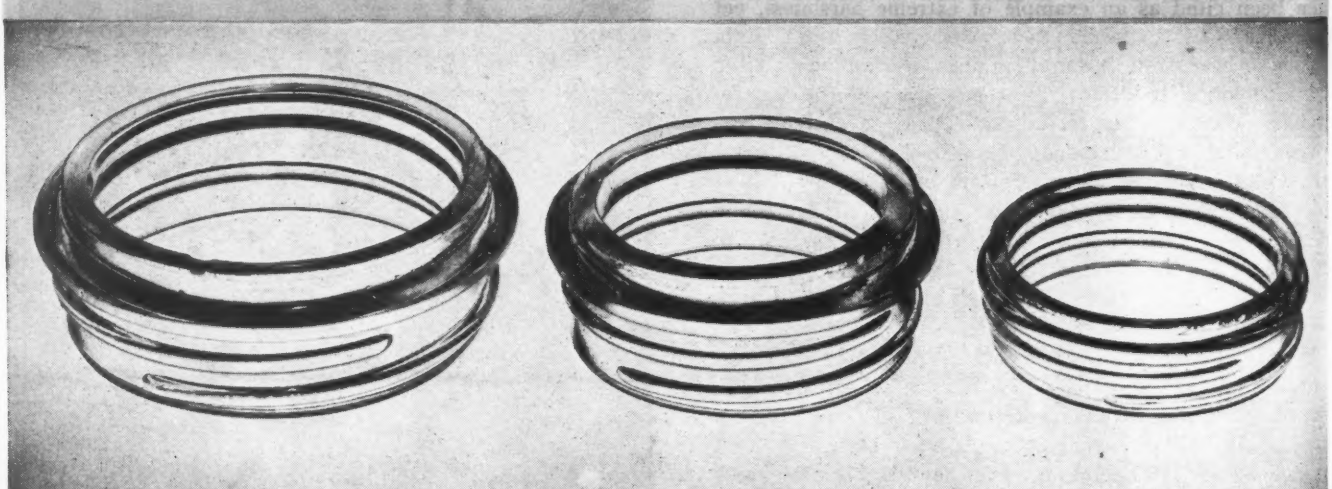
The same factors which reduced glass weights and carton size and weight have also resulted in conserving shipping space. Lightweighting has thus made a definite contribution toward relieving the country's transportation emergency.

A striking example of economy of shipping space is the returnable beer bottle of 1942 as compared with the beer bottle used now for export by the Armed Forces. A two-dozen re-shipper style carton for the returnable beer bottle occupies 1,955 cu. in. of space, while the same type of carton for the streamlined version used for off-shore shipment, holding exactly the same volume of beer, occupies but 1,622 cu. in. The saving in shipping space is 20.5%, and further shipping space economies should be effected by a design recently perfected.

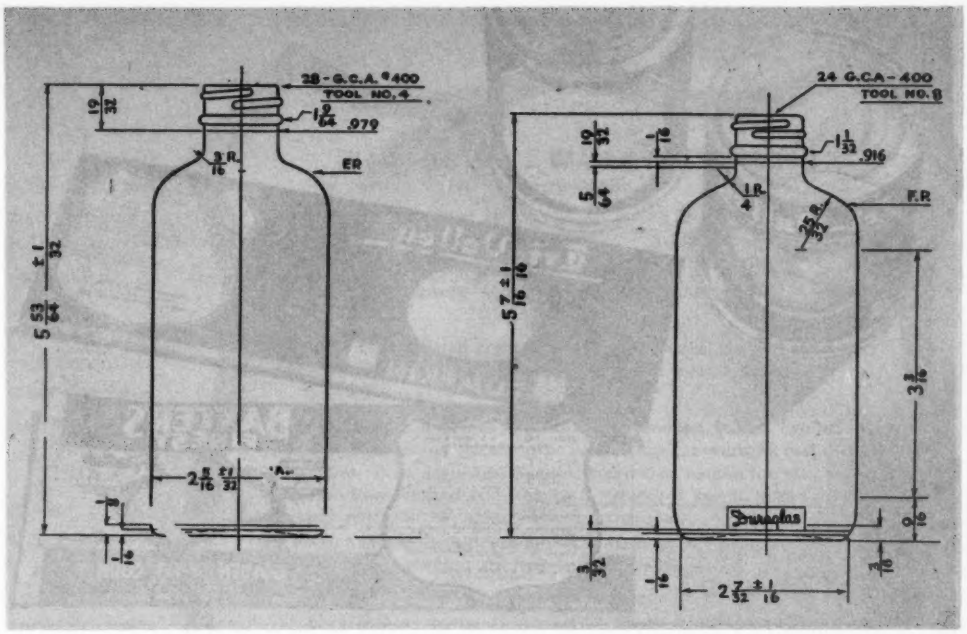
In this connection, it is well to mention the new square milk bottle and the resultant economies in weight and space. Production of this bottle on a limited scale was authorized by the WPB because of these economies. Dairies have found that adoption of the square bottle increases their storage and refrigeration capacity by as much as 47%. Loading and unloading costs have been reduced by as much as 21.35% in quart handling on retail routes and 34.2% on wholesale

WEIGHT — 12.8 OZ.
YEAR DATE—1936
WEIGHT — 9.2 OZ.
% WEIGHT REDUCTION — 28.2 %
YEAR DATE — 1938
WEIGHT — 9.1 OZ.
% WEIGHT REDUCTION — 28.8 %
YEAR DATE — 1938
WEIGHT — 6.8 OZ.
% WEIGHT REDUCTION — 48.5 %
YEAR DATE — 1939-40
WEIGHT — 6.5 OZ.
% WEIGHT REDUCTION — 49.2 %
YEAR DATE — 1940
WEIGHT — 6.5 OZ.
% WEIGHT REDUCTION — 49.2 %
YEAR DATE — 1941-1942

Vegetable jar has progressed from 12.8 oz. in 1936 (left) to 6.5 oz. at present, a reduction of 49.2%.



Reduction of the finish has had an important bearing on the lightweighting of glass containers. The 86-mm. finish shown at the left weighs 3¼ oz.; the 70-mm. finish in the center weighs 2⅝ oz., and the 63-mm. finish at the right, currently being used on the familiar vacuum-pack coffee jar, weighs only 1⅛ oz.



These diagrams, contrasting old-style Boston round (left) with the new, show how and where weight is eliminated. Re-designing cut the weight of bottle at right by 26%, reduced its height and created a more graceful shape.

routes. These savings are due to two factors: (1) the square bottle case is 28.4% lighter, requiring less physical effort on the part of the driver; and (2) its smaller size makes it easier and quicker to handle in loading and unloading operations.

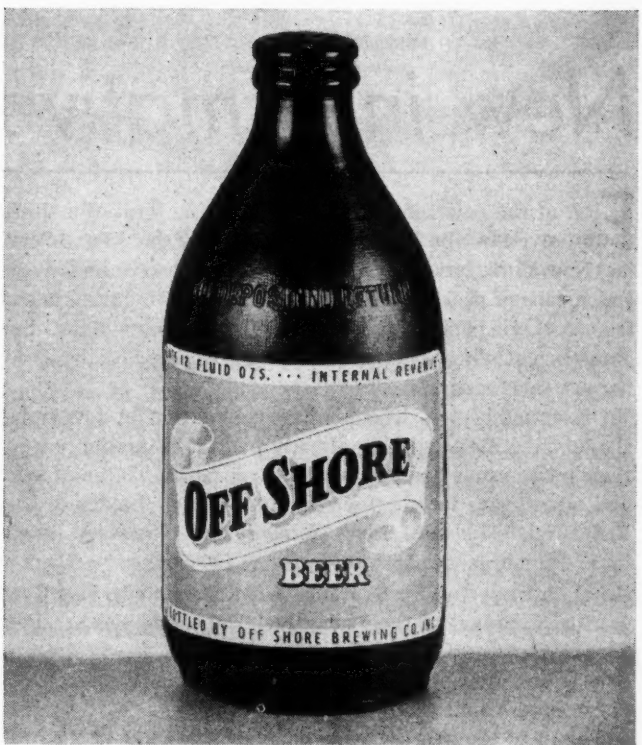
The same advantages which have made the square milk bottle so attractive to dairymen have also resulted in economies for retailers and housewives. Grocers find that their cooling cabinets now store more milk—approximately half again as much as formerly—while the housewife finds that she can store in some cases as many as twice the number of bottles in her refrigerator. These space savings have been especially important in view of restrictions placed upon wartime deliveries.

In connection with space saving, it might be added that standard food containers such as vegetable jars have been carefully designed to fit retailers' shelves and display cases, the height of the jars having been adjusted to fit the available space.

The rapid development of the glass container, particularly in the food field, has been closely identified with the development of the closure. This was especially true in connection with the trend toward lighter and sturdier containers, since it was originally axiomatic in the industry that the larger the "finish" or opening, the heavier the jar. In order to produce lighter containers it was necessary to develop smaller closures without sacrificing utility in any respect.

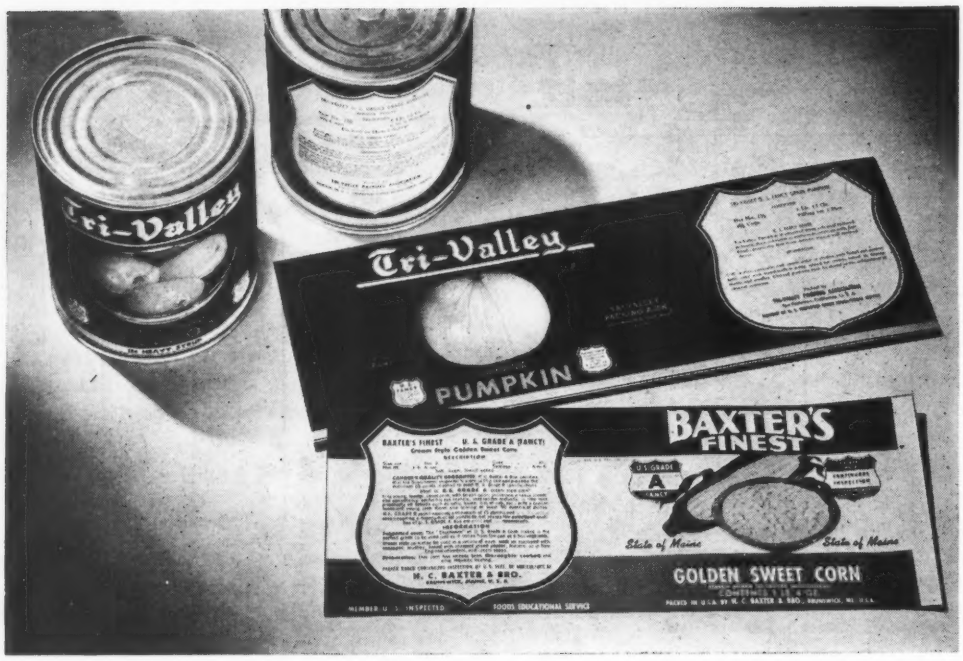
Important reductions have been made in the weight and size of the "finishes" for glass containers and closures of necessity have kept pace with these advances. Years ago the finish on a home preserving jar, 86 mm. in diameter of opening, weighed $3^1/_4$ oz. The finish on the 70 mm. mason jar, used widely also for packing coffee, weighed $2^5/_8$ oz. The 63 mm. finish on the jar now being used for vacuum-packing coffee weighs but $1^1/_8$ oz. There have been hints of a new development in the glass coffee container field in the near future. While none of the details about the new jar have been revealed, it is expected to be lighter and to have new, advantageous sealing and resealing features.

Glass container manufacturers have emphasized that reduction in size and weight of finish has meant no reduction in the utility of the containers themselves. Present containers have all the convenience and utility features that marked the earlier and heavier models.



Last year 600,000,000 lightweight, one-trip beer bottles went abroad. Breakage was less than 1 in 500,000. Weight is $7^3/_8$ oz. compared to 12 for standard bottle.

During the wartime period, glass has, of course, benefited through a larger and quicker sampling of packaged merchandise than would otherwise have been likely. But while wartime conditions brought about rapid expansion in certain lines of packaged products, the glass container companies also point out that some long-range developments which they had planned were held back because of the lack of production facilities and particularly the lack of opportunity to secure new types of packing and processing equipment. These developments may be expected to come along when peace finally returns.



Examples of first of the new labels to reach the markets. Essentials include description of the product, grade and information about use and care. Detail of shield appears opposite in color.

New informative label *that aims to tell all*

First of the new informative labels in the form of a shield approved by the U. S. Inspected Foods Educational Service, New York, have reached consumer markets in six key cities on cans of peaches, apricots, pears, spinach, pumpkin and fruit cocktail packed by the Tri-Valley Packing Assn., San Francisco, Calif. They were introduced by Dwight Paulhamus, sales manager.

Other members of the committee responsible for developing the labeling idea and who already have it in production for their own brands are F. Webster Browne, in charge of sales and advertising for the four plants of H. C. Baxter & Co., Brunswick, Me., and Dave Winebrenner, secretary of the D. E. Winebrenner plant at Hanover, Pa. Other members of the U. S. Inspected Foods Educational Service who have been granted approval of their new shield label samples are East Jordan Canning Co., East Jordan, Mich.; Case-Swane Co., Santa Ana and Merced, Calif.; Owatonna Canning Co., Owatonna, Minn.

This new copyrighted panel is adaptable only to the individual U. S. Graded labels of the brands and products of canner-members of U. S. Inspected Foods Educational Service. The purpose is to present in most usable form all types of information a consumer may want to know about her selections.

The new labeling section is a modernization of USIFES' 1942 "x-ray" type of labeling recommendation, so called because of its purpose of revealing comprehensive information about unseen contents. The new panel is recommended for canned fruits and vegetables which are voluntarily graded with the "U. S." prefix. This certification denotes permissive continuous plant inspection grading by the U. S. Department of Agriculture.

The enthusiastic acceptance of the panel has surprised even the association itself. Inquiries are pouring in from canners all over the country, according to Polly Gade, director of USIFES. One of the reasons for popularity, she believes, is the shield-like shape of the panel that associates the informative data with the reliability of the U. S. inspection shield.

Underlying all this, too, is the making of a forceful merchandising tool, since only plants qualified under U. S. Continuous Plant Inspection of the U. S. Dept. of Agriculture may be approved for using the informative shield. Starting with one plant in 1939, this voluntary continuous inspection grading even now is used by only 52 companies operating 68 plants, out of a total number of about 1,400 canning plants throughout the country.

Whether this new type panel is adequate for consumer preference over competitive labels will be determined by a nationwide study of members' brands released in a questionnaire to 3,000 consumers now in progress. Results of this study will be announced in the fall.

Essentials of the new panel include description, grade and information sections enclosed in a large inspection shield of a different color for each grade: blue for Grade A (Fancy); red for Grade B (Choice or Extra Standard), and green for Grade C (Standard). Licensing of the panel to members is permitted on the basis of conformity to the over-all 4-in. size and the $^{3}/_{32}$-in. color border. The headings—"description," "grade" and "information"—must be in the same type size and prominence, while subheadings of "use," "preparation" and "care" under "information" are of lesser importance. Brand and company name of packer are in the largest size type. This last is preceded by the certifying legend, qualifying the "U. S." prefix before the grade, that the product was packed under U. S. Continuous Plant Inspection of the U. S. Dept. of Agriculture. Where included, recipe uses must be in accordance with U. S. standards for each grade. The licensing agreement is signed on approval by the association of the so stated "Member of the U. S. Inspected Foods Educational Service."

This form must be followed, except for brand, product and grade changes, but copy detail may be selected by the member from the recommended data supplied by the association

headquarters for each canned fruit and vegetable in general use and each of the three ranking quality grades.

For descriptive terms, members who are also affiliated with the National Canners Assn. are referred to their recommendations. For grade definitions the USDA standards are followed. Under information, recipe uses are compiled and standardized by the USIFES on the basis of these sources for each U. S. grade.

The Educational Service also recommends under "use" a statement that other U. S. grades and other brands are also available, with practically the same nutritional value but with different recipe uses, as well as a section on "preparation" and "care" for the best nutritional retention. Purpose of the information section of the panel is to obtain the best results from the product in use, over and above grade and description of contents. Such information could thus be employed along with description as an additional aid in labeling products which cannot be easily graded by a composite symbol. Since flavor and nutrition are reflected by data supplied by all types of labeling, the Educational Service believes statements of variety, style of pack, grade, geographical source or locality where the product was grown, as shown by the name and address of the producer, are especially important for better consumer buymanship.

The new consumer information shield spotlights the U. S. Grade. Factors for judging are color and maturity in the raw material, uniformity of size and absence of defects which represent the workmanship of the processor. A composite symbol or grade is arrived at by point-scoring the important characteristics of the basic food on the basis of the established U. S. Standards of the Dept. of Agriculture.

USIFES members subscribe to U. S. grade labeling voluntarily because, in their opinion, such certification identifies comprehensively to the retail purchaser the otherwise indiscernible quality of the food inside the container and permits at no extra cost the right selection for the right use.

Grading A, B, C—Fancy, Choice, Standard, or 1, 2, 3, may be executed by the canner or by the Government. By the latter, this is done on a sample basis of six cans out of every thousand. Continuous Inspection Grading implies a trained Federal inspector on hand during the entire canning process. All, however, must follow the U. S. standards if the grade-labeled product is shipped in interstate commerce or risk seizure for misbranding by FDA. Only canners who pack under the Continuous Inspection program of the Dept. of Agriculture may label their products with the U. S. prefix before the grade—as U. S. Grade A or Fancy.

USIFES canner members are convinced that only those products that are U. S. graded during the pack instead of after are certified as to grade for all the cans of the entire production. Since governmental continuous grading service is not available to all canning plants (*Contnued on page 178*)

(BLANK) BRAND U. S. GRADE A FANCY TOMATOES

DESCRIPTION

Size No. 2½	1 lb. 12 oz.
3½ cups	3-4 servings
Minimum drained weight	66%
Grading score	90-100 points

U. S. GRADE A FANCY

tomatoes are prepared from ripe, sound tomatoes of good red color; packed whole or almost whole; with normal tomato flavor.

INFORMATION

USE these whole tomatoes for individual servings, baked, broiled, or in salads. The remaining juice may be used in aspic, beverages, and cocktails; breads and cakes; flavoring in soups, gravies, or sauces; for poached eggs; or frozen into sherbets and ices. U. S. Grades B and C, while practically the same nutritionally, have different recipe uses.

PREPARATION: Retain Vitamin C content by not over-cooking; and by storing unused portions, covered, in the refrigerator.

Packed Under
Continuous Inspection of U.S. Dept. of Agriculture by
(BLANK) PACKING COMPANY
City, State, U.S.A.

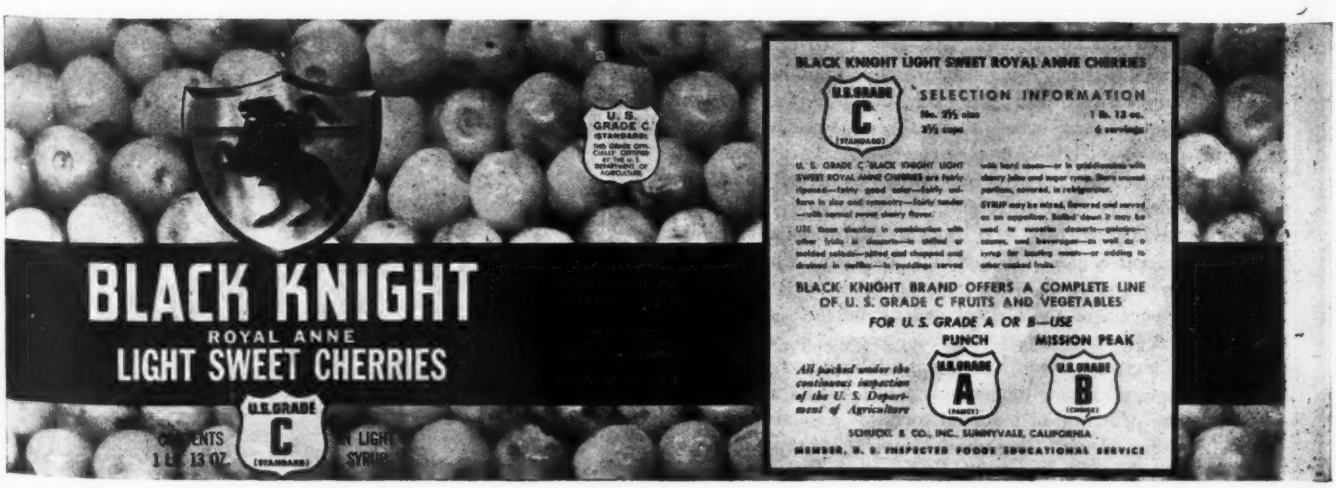
MEMBER OF U. S. INSPECTED FOODS EDUCATIONAL SERVICE

Copyright 1945 by U. S. Inspected Foods Educational Service

STECHER TRAUNG ROCH.N.Y.

An exact reproduction of Grade A (Fancy) shield panel in actual size as it appears on can labels. Grade B (Choice or Extra standard) have red borders while Grade C (Standard) have green.

Old label showing "x-ray" panel which led to new shield recommended by U. S. Inspected Food Educational Service.


BLACK KNIGHT
ROYAL ANNE
LIGHT SWEET CHERRIES
U.S. GRADE C (STANDARD)
BLACK KNIGHT LIGHT SWEET ROYAL ANNE CHERRIES
SELECTION INFORMATION
BLACK KNIGHT BRAND OFFERS A COMPLETE LINE OF U. S. GRADE C FRUITS AND VEGETABLES
FOR U. S. GRADE A OR B—USE
PUNCH
MISSION PEAK
U.S. GRADE A (FANCY)
U.S. GRADE B (CHOICE)
SCHUCK & CO., INC., SUNNYVALE, CALIFORNIA
MEMBER, U. S. INSPECTED FOODS EDUCATIONAL SERVICE

Diamond tool kits

Packaged diamond tools are being offered to the trade by the Abrasive Dressing Tool Co., Detroit, to provide medium and smaller sized machine shops with an assortment of tools heretofore almost impossible to obtain or at least obtainable only on a piecemeal basis.

The kit contains ten tools commonly used in machine shop operations. It includes dressing and cutting tools, phonopoints and a diamond scriber in addition to two holders which adapt the tools for use in either hand or machine applications.

A compact package, the kit measures roughly 9 in. by $4^1/_2$ in. when closed. It is made of wear-resistant simulated leather and can be quickly and securely closed. Individual slots or pockets fit each of the tools. The entire kit is registered as a unit with the manufacturing company and a permanent record is kept for future reference to any or all of the tools.

The principal advantage claimed by the manufacturers is the operational range the kit provides for small or medium sized shops where the outlay required to purchase tools not so packaged is a distinct obstacle. Since each tool has an identifying red band it can be picked out of the stockroom piles instantly if displaced. And, with each tool provided with its own pocket, tool-room attendants can check at a glance if anything is missing when the kit is released and again when it is returned.

The success of the G-P or general purpose kit has encouraged the company to consider expansion of the idea, providing groups of more highly specialized tools for radius grinding and boring operations. Other kits embodying the same principle of assorted tools for assorted uses are being designed with the same features of convenience, ease of checking and compactness.

DESIGN

Dressed up hearing aids

In its many years of supplying hearing aids, Sonotone Corp. discovered that much of the original shock involved when a person realizes he needs a device of this sort can be lessened if the instrument is carefully and properly presented. To make this presentation easier for both the salesman and the customer, an entirely new set of packages has been adopted recently by the company.

The instrument and all its separate parts are packaged in attractive green and yellow folding cartons with easy identification features. A cutout in the face of the transmitter carton allows the salesman to see the color and number at a glance while the parts packages have blank spaces for any and all information about the part within. These packages are primarily for stocking purposes and the customer seldom if ever sees them.

When the instrument is shown to the customer it is presented in the velvet-lined, hinged, leatherette-covered, metal box shown in the upper right-hand corner. The principle behind this rather expensive presentation package is twofold. It is offered as a permanent box in which to keep the instrument when not in use and it sells the quality and fineness of the instrument to the customer. From the angle of good salesmanship, the customer sees only the well-designed transmitter first and is not unnecessarily confused by the number of pieces which he must wear with it. These are presented later.

The velvet platform upon which the instrument rests is removable and, after the sale is made, it is pointed out that the platform can be discarded and the box used as a permanent container. Four pegs, one in each corner, are provided underneath the platform for the receiver cord so that it can always be kept in good condition.

CREDITS: *Cartons, Robert Gair Co., New York. Presentation box, Farrington Mfg. Co., Boston, Mass. Package designer, Carl C. Braun, New York City.*

HISTORIES

Dehydrated foods in metal

Bulmans Ltd., Vernon, Canada, have been experimenting with various processes and packs for dehydrated fruits and vegetables since 1916. Recently, the company felt that its experiments had progressed enough to attempt a consumer test of nine varieties in the city of Vancouver.

The foods are packaged in tin cans because, according to T. R. Bulman, president of the company, "it is our considered opinion that there is no substitute for metal as a container for a full line of dehydrated vegetables for distribution in small family-sized packs."

The first four-month test has been just completed and the results have been interesting and encouraging. In addition to newspaper and radio advertising, the facilities of the Vancouver Daily Province Kitchen were used for a cooking school under the supervision of experts in nutrition and dehydration. Samples were given away sparingly and no guaranteed sales were promised distributors.

A questionnaire was distributed to the housewives who attended the cooking school and over 10% returned them properly completed. Seven questions to find out why the housewife purchased dehydrated foods, were answered as follows: time saved in preparation, 120 points; no waste, 101 points; easy to store, 81 points; no garbage disposal problem, 74 points; low cost, 58 points; light weight in shopping bag, 47 points; easy on the hands, 42 points. The maximum number of points would have been 140.

From long experience and intensive research Bulman has come to these conclusions about the processing and packaging of dehydrated foods: The product must be packaged in a metal container in an inert gas or vacuum of at least 25 in. and labeled attractively and informatively. They must be priced to compete with the canned equivalent. And, while the packages are under the control of the processor, they must be stored in a temperature of not higher than 65 deg. F. and all distributors should be educated to handle them in the same way.

Bacteria packets

Garden inoculation, which is essentially bacteria, requires a highly specialized form of package protection. Technical requirements of the package for this type of product are: (1) complete moisture-vaporproofness to retain the moisture originally in the product, (2) a material which will not inhibit the growth of the bacteria, (3) a material which will not be attacked by the bacteria.

The Kalo Inoculant Co. of Quincy, Ill., made various tests on materials in an attempt to devise a flexible package for its garden inoculation. It was found that cellophane would not serve the purpose since the bacteria destroyed the material within a few weeks. Cellophane laminated with wax withstood two to three months' attack.

The package which finally filled all the requirements was a laminated foil and acetate film made into small packets. The layers starting from the inside are as follows: A vinyl coating which acts as the heat-sealing agent and colored to make its heat-sealing surface distinguishable; foil to give the packet its moisture-vaporproof qualities and cellulose acetate to give added strength. The cellulose acetate is reverse printed to maintain the glossy surface outside. A solid color effect is achieved by adding coloring to the laminating adhesive.

The face-to-face packet is heat sealed with a diagonal crimp to effect a moisture-vaporproof seal. After the packet is opened the user is cautioned to protect the remaining portion of the product by re-sealing with a moderately hot iron.

To insure the efficacy of the inoculation, the package is dated similarly to photographic supplies and for best results the consumer is advised to use the contents before the expiration date.

CREDIT: *Packets, Dobeckmun Co., Cleveland, Ohio.*

Ice cream cartons

. . . 300 million of them

FOLLOW INSTRUCTIONS FOR EASY ASSEMBLY
FOR SECURITY
HIDE EMPTY CARTONS WHERE THEY CANNOT BE SEEN
INSTRUCTIONS FOR ASSEMBLY
TO FILL THIS CARTON
FOLLOW INSTRUCTIONS FOR EASY ASSEMBLY

More than 300,000,000 cartons are currently being purchased so every soldier may have ice cream, made and packaged right in the field.

Over-all view of the portable ice cream machine, showing cold storage compartments in which packaged product is placed to harden.

Ice-cold, flavorful ice cream is bringing another touch of home to America's soldiers this summer, whether they are on a sweltering Pacific Island which is in the process of being wrested from the sons of Nippon or in any of the thousands of other stations along our far-flung supply lines.

No matter how remote their location; no matter what the transportation facilities, they may be reached with the doughboy's favorite dessert through the development by the Quartermaster Corps of a new machine and the procurement of millions of cartons which will assure its rapid and safe delivery and distribution.

The cartons (in excess of 300 million are on the procurement program) also have been developed to bring to Johnny Dough a touch of the corner drugstore back home. Made of folding boxboard, they may be of a slightly different shape from those he would be buying in Flatbush or Fargo, but they will be near enough so that he will eat his ice cream with the same relish he did when he ducked out of high school during a hot afternoon for a half hour in the delicatessen.

Called upon to develop a carton for the ice cream program when it was initially embarked upon by the Quartermaster Corps, the Corps' packaging specialists, familiar with the industry, went directly to the industry with their problem.

"We want," they said in effect, "a folding boxboard ice-cream carton, half-pint capacity, of a type that may be direct-filled, of the same quality board as the ice-cream cartons made for the civilian trade—but it must not be white."

After discussions with industry, the box was evolved. It isn't an innovation, but its specifications are somewhat unusual in the field of Army "specs." Unlike most such specifications no rigid definitions of type of board, color, wax content, and other characteristics are set forth—only the minimum thickness, etc., and the added specification that the finished ice cream cartons shall be a "dull, non-reflecting color."

Naturally, since they are food containers, the specifications provide that the "boxboard, ink, wax, glue and packing materials shall transmit no odor or flavor to the product when the filled and closed carton is stored at a temperature of 10 deg. F. for a period of 14 days."

The board used may be either a filled or a homogeneous sheet, made of bleached sulphate; bleached, semi-bleached or unbleached sulphite; soda pulp or mechanical pulp or any combination of these. The minimum thickness required is 0.016 in. before waxing and a minimum weight for the unwaxed board is established at 69 lbs. per 1,000 sq. ft. (with the exceptions that board made on a Fourdrinier machine may be 0.015 in. thick and weigh 63 lbs. per 1,000).

The use of minimum specifications wherever possible was determined upon in order to permit as wide a segment of the industry as possible to participate in the production.

The cartons will be shipped to the field flat and filled in forward positions as near to the front lines as possible from the portable ice-cream machines now being shipped to all parts of the world where American soldiers are stationed.

The ice-cream outfit, small as it is, is really a miniature ice-cream factory. Complete with a cold storage compartment, it weighs only 1,200 lbs. and occupies a space only 79 in. long, 32 in. wide and 55½ in. high. The frame and sheathing are aluminum and the cellular rubber insulation weighs only half as much as cork. Because of its lightness and compactness, the entire machine can be moved readily by plane to the remotest forward position.

Equipped with both a five-horsepower, air-cooled gasoline engine and a three-horsepower electric motor, so that it may take advantage of whatever power is available, the freezing compartment of the "factory" has a capacity of 2½ gals.

and will produce a semi-frozen mix in from 7 to 14 minutes, depending upon outside temperature.

When ready, the semi-frozen mix is drawn off through a filling spout into the cartons, one end of which has been closed by the operator. The filled cartons are then placed in the cold storage cabinet (capacity 40 gals.) to harden. If the unit is set up anywhere near a larger refrigeration unit, such a unit may be used, for the manufacturing mechanism is capable of turning out 80 gals. in an 8-hr. shift.

The material used for the ice cream is a powdered or paste mix developed by the Quartermaster Corps to which nothing need be added but an equal volume of water to make a delicious, rich ice cream. The mix comes only in vanilla flavor, but a set of special recipes provide eight additional flavors by using components in the standard Army "B" ration.

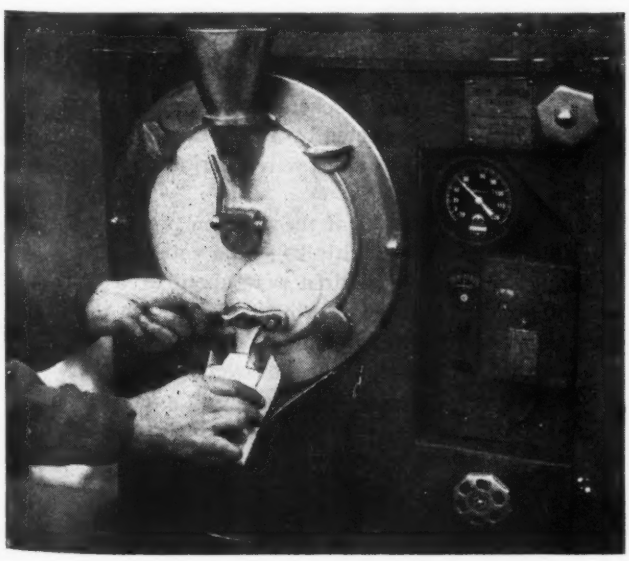
The pamphlet with its recipes is now sealed in a waterproof envelope and placed in the case containing six $4^1/_4$-lb. cans of ice-cream mix powder. The added flavors are chocolate, lemon, fruit cocktail, peach, coffee, maple, pineapple and hard candy. The last-named novelty is prepared by crushing a third of a canteen cup of hard candy and adding to the mix.

Ice cream is high on the Army's list of morale and nutritive foods, being an ideal way to provide whole milk to troops and also give them their favorite "back home" confection.

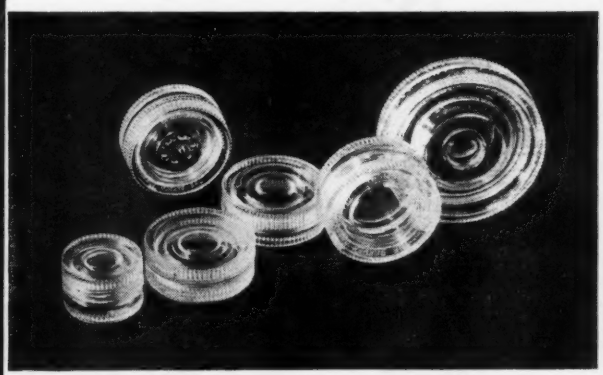
The ice-cream mix is prepared from whole milk, sugar and flavoring, and is packed in metal cans (603 by 700) with soldered side seams and compound-lined, double-seamed ends. Cans are made with 0.50-lb. electrolytic tinplate bodies and ends of the same material or bonderized blackplate. The cans are coated with lacquer before packing, six to a box, for overseas shipment and when filled the air is exhausted and an inert gas substituted.

CREDITS: *Cartons, Bloomer Bros. Co., Newark, N. Y.; Marathon Corp., Menasha, Wis.; Sutherland Paper Co., Kalamazoo, Mich.; Container Corp. of America, Chicago; Chicago Carton Co., Chicago; Fibreboard Products, Inc., San Francisco; Pollock Paper & Box Co., Dallas, Tex.; Michigan Carton Co., Battle Creek, Mich.; Atlanta Paper Co., Atlanta; Gardner-Richardson Co., Middletown, O.; Richardson Taylor Globe Corp., Cincinnati; Waldorf Paper Products Co., St. Paul, Minn.; J. E. Smith Co., Baltimore; Gaylord Container Corp., St. Louis, and others.*

Powder, water and flavoring go into the spout shown at the top, and out comes liquid ice cream which is filled directly into carton. No liner of any kind is needed.



Jewel box for bearings



Sparkling, crystal-clear methyl methacrylate molded containers—seldom before seen as other than a decorative package for luxury products—have been adapted to a highly important and entirely functional war job. In a circular form closely resembling pre-war rouge cases, methacrylate boxes are now protecting those jewels of industry, the precision ball bearings responsible for the accuracy of the famed Norden bombsight.

Surface finishes of these bearings are controlled to slightly less than half of one-millionth of an inch—about $^1/_{6,000}$ of the thickness of a human hair. The touch of a finger could cause corrosion sufficient to ruin a bombsight. Proper package protection during transit from the bearing plant to the bombsight assembly plant has been a problem since the start of the war and with the best possible packages there were numerous failures.

Methacrylate suggested itself not only because of its optical-clear transparency—permitting inspection of the bearings without touching them—but also because of its resistance to a wide range of conditions of temperature and moisture, its imperviousness to the oil in which the bearings are packed and its strength, toughness, light weight and ease of fabrication.

According to the Barden Corp., of Danbury, Conn., manufacturers of the bearings, there have been no container failures since adopting methacrylate.

Six sizes of the new boxes were precisely designed to fit the six sizes of ball bearings. Boxes are injection molded, twelve at a time. Threads on each half of the screw-type containers, which are provided by means of special inserts used in the molding process, are held to extremely close tolerances in order to provide a tight seal when the two halves are joined. Each box is designed to hold just one bearing, which is shipped ready for installation. All boxes shipped in this country are returned and re-used an average of ten times.

In the packaging operation, the bearings are submerged in a special clear oil for extra protection within the boxes and the boxes are then screwed together and sealed on the outside with a transparent adhesive band. Those going overseas for replacement use a neoprene gasket for an additional seal between the two halves of the box. A label on the outside gives the date packed, size of the bearing and type of the oil used.

CREDITS: *Methyl methacrylate Lucite resin by E. I. du Pont de Nemours & Co., Wilmington, Del. Molded by Plastic Molding Corp., Sandy Hook, Conn.*

Children are consumers too and toy manufacturers are taking this fact into consideration in the planning of postwar toy packages.

Recently more than a hundred pre-school children were interviewed for their preferences of colors, geometrical forms, types of illustrations and types of paper surfaces in the same way that a consumer package preference test would be conducted for grown-ups.

The survey was an experiment made in a private nursery school and in a public school kindergarten in Jackson Heights, L. I., by a package designer. The tests were planned by the designer in preparation for a series of packages he is designing for the Playtoy Mfg. Corp., Jamaica, L. I.

No procedure was available for such tests, but the method used and the report of the results obtained may be a helpful starter for other manufacturers with packages to plan for the children's market.

Test material was divided into five groups and was shown to each child at eye level. The children were first brought to a color chart from which they were asked to select the color they liked best. Second, they were given a series of two-color combinations and told to select what appealed to them most. Third, they were given their choices of six geometric designs, including a circle, a cube, a pyramid, etc. Fourth, each child was seated at a table and asked to select between gold and silver, dull and glossy surfaced paper. Fifth, the children were asked their preferences between black and white and full color illustrations, line drawings or tone drawings, between artwork and photographs.

The children's ages ranged from $2^1/_2$ to 6 years of age. The tests were presented first to children in the private nursery school, ages two to three. In the public school kindergarten, the tests were presented to children ranging from four to six years. The children in the nursery school were a little shy and needed coaxing until they entered the spirit of the tests as a game. In the kindergarten, the older children clamored to be first to take the tests.

Eighteen colors were used for the color preference test—primary, secondary and various shades of each. From these, 41% of the children voted for soft red; 38% blue and 5% yellow. The remainder either would give no preference or represented percentages too small to indicate a trend.

All of the children preferred soft colors. The two- and three-year olds and the five- and six-year-olds were inclined toward soft red, while the three- to four-year olds showed a definite preference for blue. The majority of boys voted for blue while a majority of the girls voted for soft red.

Interesting, too, was the large number of children who were reported to have chosen purple as their favorite color, but then switched either to red or blue before they made their final selection. Many did the same thing with tan.

Nine two-color combinations used for the tests were: light blue and light green; pink and blue; red orange and medium blue; vermillion red and greenish blue; turquoise blue and lemon yellow; lavender and chrome yellow; vermillion and medium green; yellow and tan; lemon green and red orange.

Votes were 58% for red and greenish blue; 14% for yellow and red; 8% for yellow and blue. The remaining 20% of the votes were scattered among the other color combinations. There seemed to be no differentiation between age groups or sexes in this voting.

When asked to choose between gold and silver; 50% said they liked gold and 50% voted for silver. Most of the boys voted for gold while most of the girls voted for silver. A shiny varnished package was selected by 62% in preference to a dull finish.

Six geometric shapes included a pyramid, an oblong, an irregular square, a cube, a sphere and a tapered oblong. The tapered oblong was selected by 46%; the pyramid, by 32%. The remaining 22% of votes were distributed among the remaining four shapes.

For illustrations, 68% of the children preferred a stylized drawing in comparison with 32% who voted for the realistic drawing. The older children were about evenly divided in their votes for a stylized drawing in comparison with a realistic one with a slight advantage toward the stylized type. The two- and three-year olds, however, voted in toto for the stylized drawing. Line drawings were preferred by 72% while only 28% selected the tone drawing. More than 80% of the two- to three-year olds voted for the line drawing while 60% of the older groups chose the line drawing.

When the realistic drawing was compared with a photograph, 62% chose the photograph. Age groups voted simi-

larly on this item. Color photos were selected by 80% when shown in comparison with black and white photos.

To be sure that the children were not being influenced by those who conducted the tests, the position of the test material was often changed to see if it affected the selections. For example, at one point, children seemed to be choosing a color that was in the center of a group. This color was moved, but was still selected no matter where it was placed.

The completed packages illustrated on these pages show how the results of the survey have been incorporated in toy package design. These cartons were formerly made of plain chipboard with end labels. First innovation was a stylization of the child figures on the packages in accordance with what the children said they preferred. These figures are intended to appear as parents want their children to look and the way the children think they look.

The children illustrated on the packages are also depicted as the correct age of the children who will play with the toys, thus acquainting the buyer with the age of the child for whom the toy is suitable. This is important because most parents are afraid to buy toys which are "too oldish or too youngish."

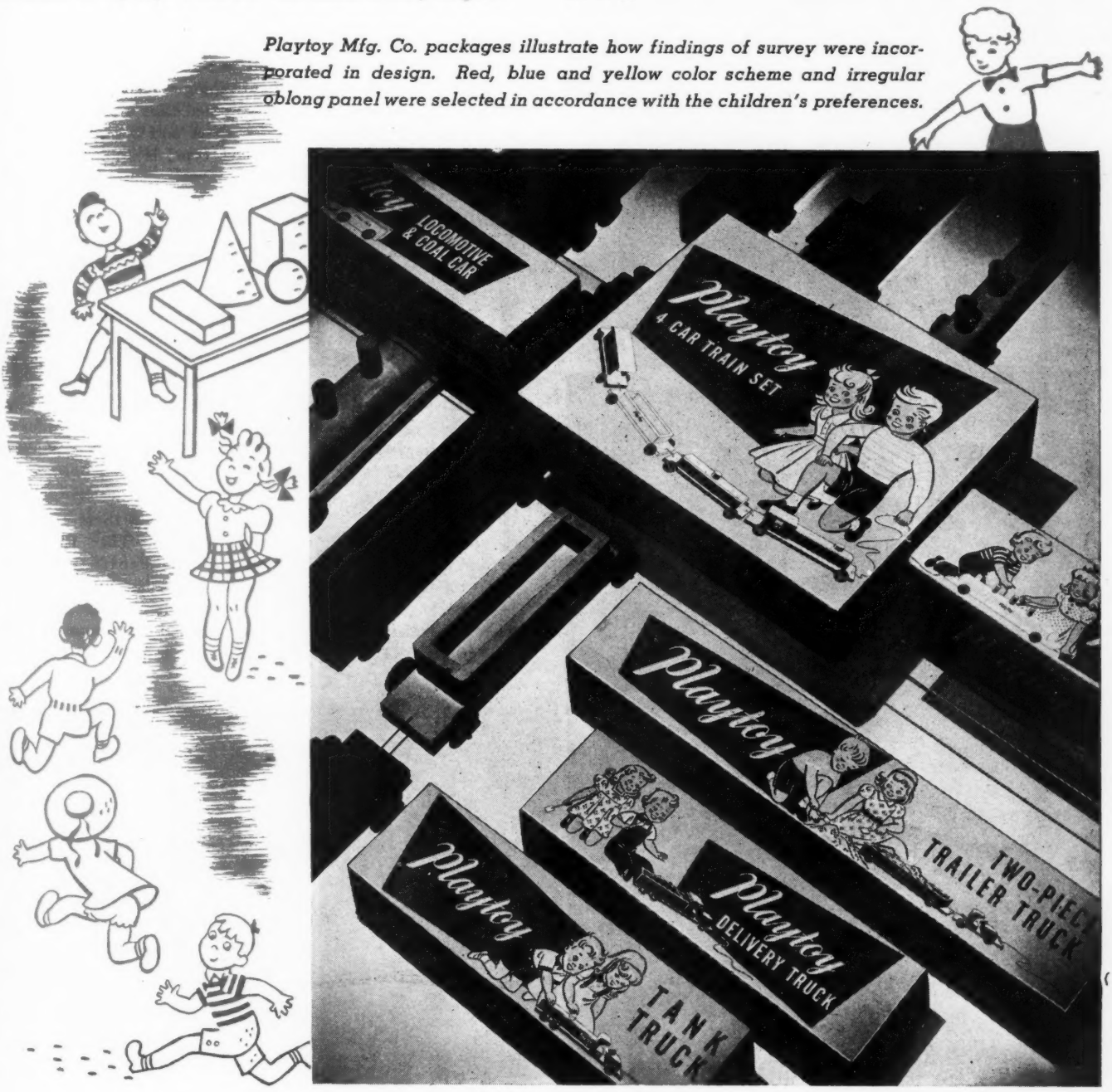
A color scheme of red, blue and yellow was selected for the family color scheme in accordance with the preferences in the survey. Even the tapered oblong was incorporated for the background panel of the design as the preferred shape the children selected, thus giving the appeal of this form on a rectangular package.

The family color scheme is also important because the wooden Playtoy sets sell in ensembles: four-peg wagon for children one-year old; a 5-peg tank for 18-month-old children; a tank truck, delivery truck and two-piece trailer truck for children 18 months to two and three years old; a locomotive, coal car and trailer set for children from two to five years old; a three and four-car train set for children from three to five years of age. There is a different action, too, in each design, so that each package has its own individuality.

These packages are thus designed not only with counter appeal for the parents who buy them, but for the child when he gets them. If children like them, the sales grow.

CREDIT: *Research conducted and packages designed by Alan Berni, N. Y. C.*

Playtoy Mfg. Co. packages illustrate how findings of survey were incorporated in design. Red, blue and yellow color scheme and irregular oblong panel were selected in accordance with the children's preferences.



PACKAGING

1

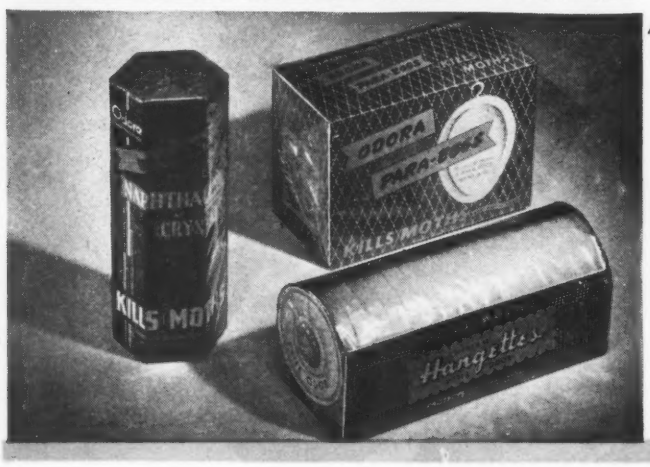
1 The Vista Co.'s original Pine Oil has grown to quite a family which now includes a bubble bath, a cologne for women and a cologne for men. Packaging of the entire line has followed a family pattern. Even though bottle shapes and sizes are different, the labels and unusual wooden closures tie the packages together. The pine-cone design decalcomania labels are particularly effective as they give every opportunity to show off the striking green of the pine cosmetic itself. Labels, The Foxon Co., Providence, R. I. Decalcomanias, Tec-Color-Craft Products, Los Angeles. Closures, King Button and Wood Turning Co., Los Angeles, and Variety Wood Turning Co., Pasadena. Bottles, Glass Containers Inc., Los Angeles.

2

2 To provide additional protection against atmospheric moisture for their molding compounds, Durez Plastics & Chemicals, Inc., have adopted a new taping method for their fibre drums. In the past the kraft gummed tape often cracked due to the imperfect fit between the cover and body of the drum. The new tape, a pressure-sensitive type, is applied by means of a specially adapted vertical drum sealer. At the same time, Durez felt that the label could be improved. The drum on the right shows the newly designed label which incorporates the name Durez reverse printed on a green background. Pressure sensitive tape, Industrial Tape Corp., New Brunswick, N. J.

3

3 A small set-up box made to resemble a garden drink-server holds three 2-oz. red-capped containers of Queen Helene's "Mint Julep" skin cosmetics for special summer promotion. The three items constitute a "Mint Julep Bar" for summer skin care and are being merchandised as the perfect gift or prize. The box, $4\frac{1}{2}$ in. by 4 in. by $2\frac{1}{4}$ in., is a convenient size for the overnight bag. Design, Nina Lee, N. Y. C. Box, A. & A. Rudnick, Inc., N. Y. C.



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4 The Odora Co., New York, has adopted these three new packages for their moth preparations. The "Hangettes" carton, in the foreground, has a flap which rolls over the products when the outer cellophane wrapping is applied, making the top of the package round to conform with the shape of the Hangettes. The naphthalene crystals come in a tall, six-sided container with a shaker top. Para-Eggs are packaged in a simple folding carton

5

PAGEANT

with the color planned to do the merchandising job. Cartons, Acme Folding Box Co., Inc., New York City.

5 The entire Pink Clover line of Harriet Hubbard Ayer has been re-dressed in a series of bright new packages. The highly stylized clover design is repeated on all the packages in delicate pink and fuchsia tones combined with bright pastels—torquoise, emerald-green, aqua-blue. The volume sellers, Pink Clover Cream Cologne and Cologne, now appear in silver-colored foil boxes overlaid with clovers. Art work, Umberto Romano.

6 Visual inspection as well as adequate protection for such products as candy, nuts, toiletries and small hardware items is afforded by this newly developed cylindrical container whose paperboard sidewalls incorporate a clear circular window of 0.005 acetate sheet. The cans are of friction-top construction with metal ends and replaceable pry-off metal covers. The outer layer is double varnished for attractive appearance and cleanliness while the inner layer is coated with clear paraffin wax to retard the spread of grease when used for products such as the salted nuts packed for Marshall Field & Co. The acetate window is securely sandwiched between plies of the sidewalls. The one illustrated for candy has a special all-over design for Altman & Kuhne. Container, Weinman Bros., Chicago, Ill.

7 Lentheric's newest product is a "Tweed" powder-pact. It is face powder pressed firmly into a medallion and packed into a light-weight paperboard box with a metal liner. Complete with puff, the new conception of the old-fashioned compact is being merchandised as ideal for traveling.

8 A cellulose acetate stand which forms the base of the package and also serves as a holder for three bottles of manicure preparations plus an orange stick and an emery board, is the "news" in the "New Era" set by La Cross. The paperboard lid which slips down over the base is dramatically decorated with sketches of the capitals of the world. Lid, F. N. Burt Co., N. Y. C. Base, Sterling Plastic Co., Union, N. J.

9 For the first time, "Penetone" cleaning fluid is being offered for retail sale. Previously it has been used exclusively in

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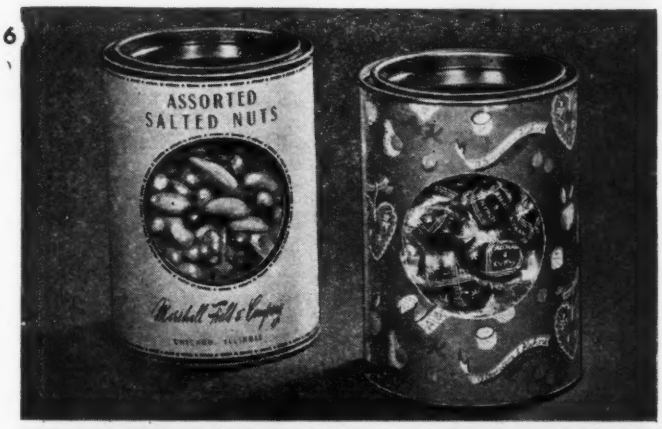

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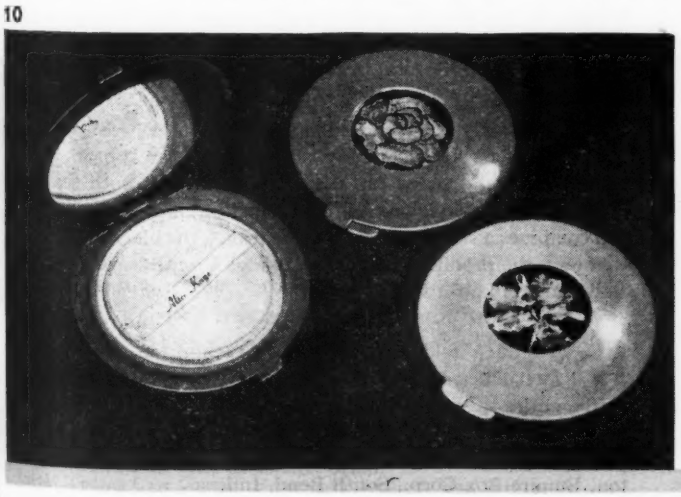

9

PACKAGING PAGEANT

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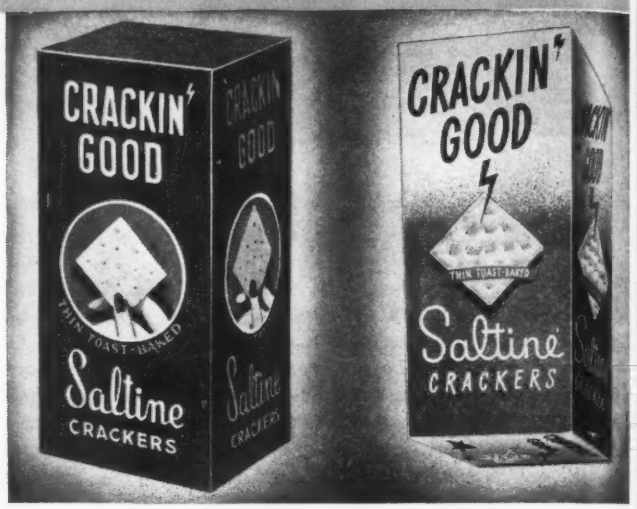

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factories, mechanized units and aboard ships by the armed forces. The label design as adopted to attract the consumer is a brilliant red-orange which contrasts effectively with the yellow-green of the liquid. All printing is done in black or reverse white. Label design, Leonard Koppel, N. Y. C..

10 The 5-inch, wafer-thin plastic compact put out by Alice Kaye, Inc., Chicago, handles the decorative treatment in an unusual and interesting manner. Under a transparent window in the lid is inserted a lithographed reproduction of a Kodachrome. Brilliant flower designs contrast with the colors of the compacts and are held in place by the large beveled mirror. Design, Lea-Tek Studios, Chicago.

11 Two of the most popular items bottled by the Spice Island Co., San Francisco, Calif., are highly hygroscopic onion salt and garlic salt. The packaging problem was to achieve a closure which would keep moisture out and flavor in. A moisture-proof inner seal plus a screw cap was found to answer the problem. Jars, Hazel-Atlas Glass Co., Wheeling, W. Va. Screw cap and Filma-Seal, Ferdinand Gutmann & Co., Brooklyn, N. Y. Labels, Alvin E. Bertrand Co., San Francisco, Calif.

12 A hinged-lid box made in the form of a book holds five cakes of Lightfoot Schultz's Avaderma soap specially recommended for the care of baby's skin. While the packaging of the soap itself remains the same as that for adult use, the box is dressed up in baby colors and carries copy on "the care of baby's skin." The box cover is decorated with a reproduction of quilted satin tied with a ribbon bow. A ribbon tab is used as a fastener. Box, Federal Carton Corp., New York City.

13 The only information appearing anywhere on Mrs. Warner's "Mother May's" sauerkraut jar appears on the cap. This metal screw cap does double-duty: it both seals the jar and acts as the label. Lithographed in black and white, the cap combines a strong appeal for attention—the black contrasting well with the product. Cap, The Aridor Co., Chicago, Ill. Jars Ball Bros., Muncie, Ind.

14 This new folding carton for "Crackin' Good" saltines, a forerunner of the re-packaging program which will extend to the entire "Crackin Good" line, uses the cracker as the focal point of interest. The new package (right) uses clean blue and white to set off the trademark which appears in dark red. Carton, Empire Box Corp., South Bend, Ind.

Tool for sealing bags and case liners

*by Earl Stafford**

Increasing use of heavier case-lining materials for overseas shipment has complicated the sealing problem, especially where the case-liner sheet is heavily creped. Pouch or bag-type liners with factory-made seams eliminate much uncertainty but still present the problem of satisfactory top closure. In handling large numbers of standard packages on an assembly belt it is possible to effect a seal by passing the top edge, coated with pressure-sensitive adhesive, through fixed, mechanically driven squeeze rolls. However, since more pressure than can readily be applied with the hands is required, sealing of odd-size packages, not adaptable to assembly-line operation, with pressure-sensitive adhesives has been difficult.

At the request of the Office of Production Research and Development of the WPB, this company made a study of the possibilities for securing more satisfactory closures by the use of a specially designed hand tool.[1] In the course of this study, a laboratory investigation was made of a wide range of liner materials used in combination with commercial adhesives in the form of water emulsions, solvent dispersions and hot melts.

Hot melts are difficult to use and introduce fire hazards and objections from the operating personnel. With the other two adhesives there is great danger of leaky closures when using the heavily creped stock. This is especially true for the highly desirable satchel type of closure, because folding over and pressing down top will cause joints to open up unless an unduly long time is allowed for the adhesive to dry or set.

A pressure-sensitive sealing compound that would adhere tightly under moderate pressure appeared to be the best solution. It was found that a paper tape heavily coated with an asphaltic mix of the proper characteristics would work well. When the top edges of a bag are brought together, the tape, if folded along its center line and placed over them, will make a satisfactory seal if pressed into place with moderate pressure. If the tape is cut long enough to project about one inch at each end, corner or end leakage is prevented.

While the investigation was in progress a number of manufacturers of case liners started production of bags which have a pressure-sensitive ribbon of asphalt applied inside the top just below the edge. As in the case of tape, the sticky nature of the compound requires that the surface be protected with a strip of cellophane. When this is stripped off, the edges can be pressed together to make a tight seal. This operation, like that of the tape seal, requires more pressure than can readily be brought to bear by the hands alone.

These liners are used on assembly lines with the package traveling along on a conveyor in such a way that the top edges can be passed through a pair of motor-driven squeeze rolls mounted in a stationary position. The device uses a machine adapted from the cloth-cutting trade mounted in an upside down position. This set-up, however, is not flexible; it cannot be used for packages of varying height and does not fill the need for a portable tool to be used on large or odd-shaped packages.

The accompanying photograph shows such a portable tool of the squeeze roll type, the design of which was based on the laboratory studies of the pressure-sensitive sealing requirements. It was assembled from a stock motor and such worm and spur reduction gearing as was obtainable under the existing condition of supplies.

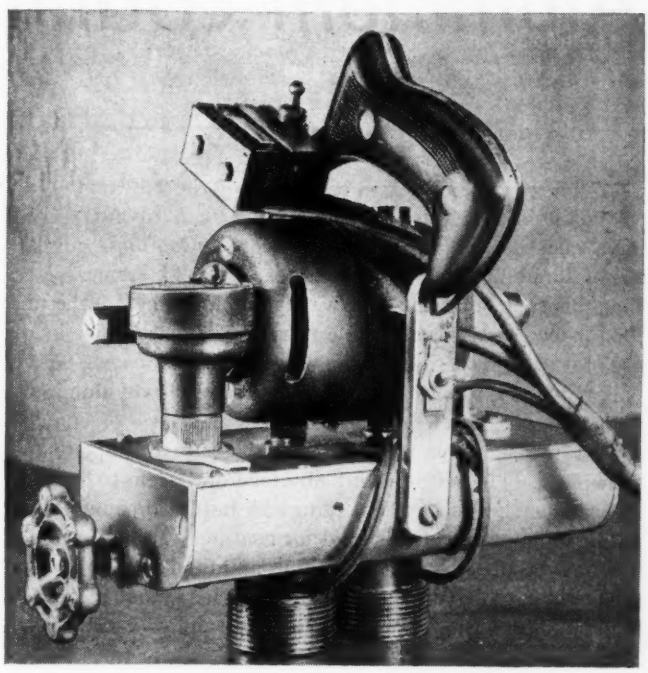
As will be seen in the photograph, the tool has a handle for supporting and moving it along the work. The top edges of the liner to be sealed are passed between the two knurled rolls located below the gear case. These rolls squeeze the stock and move the tool along at a speed of about 10 ft. per min. To allow for flexibility, one of the rollers is floating, held in position by a compression spring actuated by the hand wheel shown on the left, thus making the amount of squeeze adjustable.

A thumb switch located near the handle starts or stops the movement. A reversing switch, shown beside it, to run the tool backward has been found unnecessary. The squeeze rolls are equipped with heating coils controlled by a switch which may be seen just below the handle. This permits the use of the tool with adhesives which must be warmed to be pressure-sensitive.

The motor is rated at 1 ampere at 110 volts and has a speed of 10,000 r.p.m., varying considerably with the load. The power required is governed by the tightness of squeeze and runs about $^1/_{100}$ of a horsepower. Because of the low efficiency of the makeshift reduction gearing that had to be used, the motor turned out to be just about large enough.

The tool weighs 9 lbs. It is (*Continued on page 182*)

Heavy bags or case liners with pressure-sensitive sealing edges are effectively closed with tool developed at request of WPB. Sealing edges travel through knurled rolls at base speed of 10 ft. per min.; rolls may be heated



* Arthur D. Little, Inc., Cambridge, Mass.

[1] See "Testing Case Liners," MODERN PACKAGING, May 1945, p. 131.

1—The crown-type beer can has an all-over exterior coating of aluminum-pigmented enamel, is printed in color. Ends of luncheon meat can are similarly protected. Samples of the aluminum-coated ends are shown in the foreground.

Aluminum coatings for unplated can stock

*by W. B. Roberts**

To improve the corrosion resistance of the blackplate and bonderized stock currently in use, can manufacturers have turned to a proved method of protection involving the use of aluminum pigmented coatings. It will be remembered that this type of coating was widely employed before the war for tobacco cans, beer and ale cans and oil companies made use of it as a protection for cans containing lubricating oils.

Fortunately, war-time restrictions on end uses of aluminum pigments were lifted in time to make this type of enamel-coated steel available as a war-time substitute for tinplate and terneplate. The results being obtained now seem to warrant a permanent place for the coatings for unplated can stock.

The aluminum enamels used for coatings of this type consist of a mixture of extremely fine aluminum pigment (the same as that used in metallic printing inks) and a varnish liquid similar in most respects to that employed with other colors. The pigment proportion runs somewhat higher than it does when aluminum powder is used for paint. This "over" pigmentation results in a somewhat improved color and improved ability to take decorative inks. If the vehicle or varnish is properly selected, the enamel can be prepared some time in advance and used as needed without serious darkening or deterioration.

Where the aluminum coating is applied by means of rolls, it is well to avoid too much working of the enamel. It is also advisable to keep replacements with fresh unworked material as high as possible since the absorption of oxygen by the varnish vehicle is the principal cause of darkening.

Aluminum pigmented coatings have been found suitable for use with certain foods—for example as a prime coat on the interior of packages containing mincemeat. However, it is for exterior use that this coating is finding widest application.

Both blackplate and bonderized stock will, of course, cor-

* Aluminum Pigment Division, Aluminum Co. of America, Pittsburgh, Pa.

rode unless they are properly protected. Can companies and other reliable authorities have conducted tests which indicate that aluminum pigmented enamel coatings for purposes such as coffee cans equal commercial tin- and terneplate coatings in corrosion resistance and compare favorably in price.

Properly formulated aluminum enamels used as an exterior coating will withstand the severe service of food processing treatment. The resultant metallic finish retains an appearance comparable to that of tinplate. Moreover, the use of aluminum pigmented enamel conserves resins and oils by permitting the use of thinner films of equal corrosion resistance than is possible with conventional finishes. An excellent example is seen in cans containing well-known brands of processed meat where the aluminum coating is used on the ends of the small rectangular containers.

The aluminum finish has definite decorative value, and many beautiful effects can be obtained by the use of transparent colored lacquers over it. For example, a gold plate effect is obtained by coating the aluminum with a transparent yellow color. The aluminum finish takes offset printing with comparatively little adjustment required for the inks. However, drying must be adjusted somewhat to avoid offsetting.

A use for this type of finish somewhat similar to that on metal cans has been its adoption as a base coat for closures—a procedure which has been followed by a number of crown seal manufacturers. In this use the caps present a clean, bright appearance and are slower to rust. In addition, the aluminum provides an attractive finish for imprinting.

2

3

2—Prewar beer cans used aluminum finish for both protective and decorative reasons. It makes an excellent base for color printing. **3**—*Use of aluminum coating on the ends of Spam can reduces use of resins and oils without impairing corrosion resistance.* **4**—*Lids with various coatings shown before and after one month's exposure on a roof in the Pittsburgh area. Exposed lids are in top row. From left to right, No. 1 lids are aluminum-coated black iron; No. 2, copper-flashed plate; No. 3, manufacturing terneplate; No. 4, oil can plate alloy coating.*

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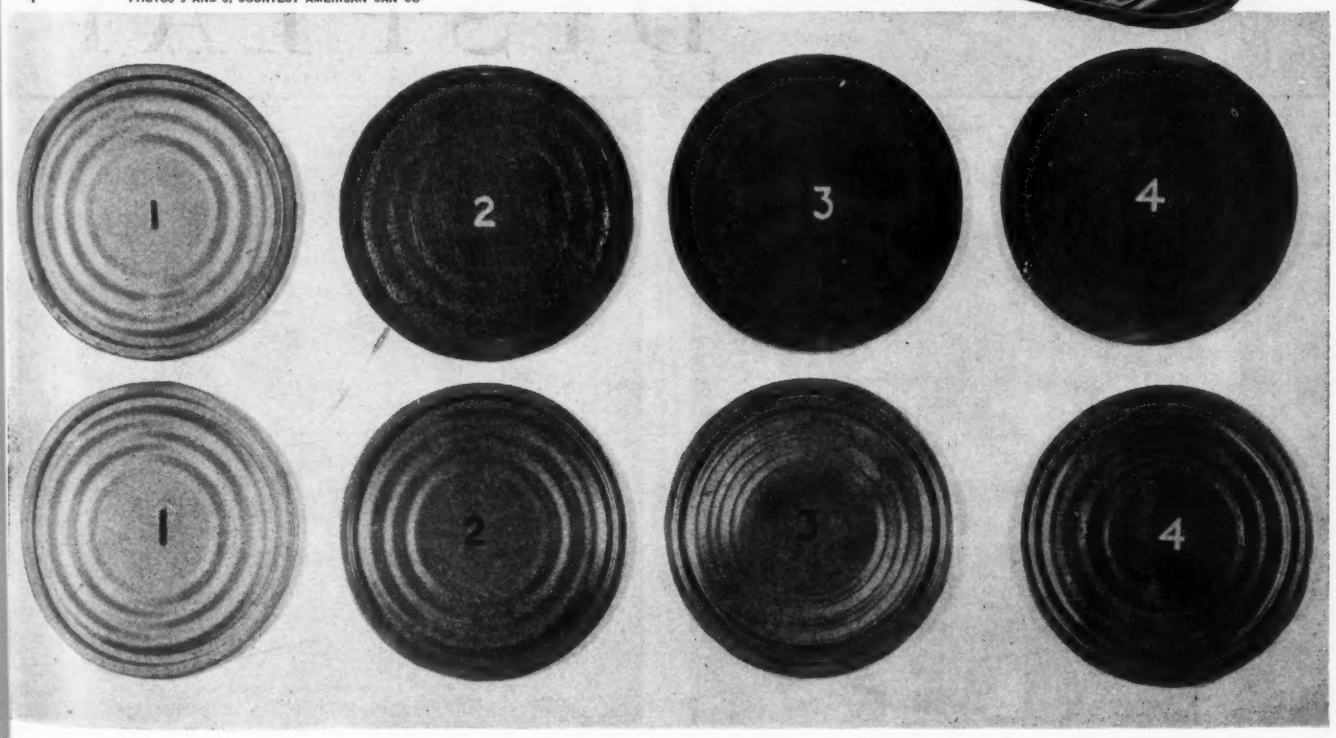
PHOTOS 2 AND 3, COURTESY AMERICAN CAN CO.



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1 A new display for Bayer aspirin tablets emphasizes the need to have a simple, quick remedy on hand in case of minor pains during the night. The full-color, lithographed card uses clever art work to put across the "middle-of-the-night" story without the need for mentioning the time of day in the copy. The card, when used in a window or on a counter, acts as a reminder to the shopper to get aspirin when he can so that he will not be without it when pain comes at an off hour. The display is also suggested for window use with groupings of the packaged product. Display created by Hussey-Woodward, Inc., New York City.

2 A collection of Pennsylvania Dutch art at the Metropolitan Museum of Art, New York, inspired the designs and color

DISPLAY

4

Tune in Gillette's Cavalcade of Sports
Boxing Broadcasts....
Listen to Bill Corum and Don Dunphy Report All The Action, Blow-by-Blow Direct From the Ringside
FREDDIE SCHOTT
vs. BILLY GRANT
Gillette BLUE BLADES
54¢

scheme for both the label and the counter display for Pennsylvania Dutch Birch Beer made by Ju-C-Orange of America, Lebanon, Pa. Five colors were used—red, brown, green, yellow and buff—specially mixed to approximate as closely as possible the originals, as revealed in the study. The man pictured in the display is a typical Pennsylvania Dutchman with the characteristic beard, flat-top hat and starched, tie-less shirt. The display, a simple easel-mounted card for counter or window, is reproduced in the same colors as the label. Designed by Thomas D'Addario, New York City.

3 After talking with several hundred retailers, G. F. Heublein & Bro., makers of A-1 sauce, discovered that because of the decided trend toward self-service and semi-self-service in grocery stores, a self-service type display is much more effective than a reminder type. The company, therefore, has adopted this basket for counter use. When it is placed in a "hot spot" or near the register it acts as an impulse salesman—the customer simply helping herself and adding the bottle of sauce to her other purchases. Reports of the success of the new basket display have been more than satisfactory. Display, Consolidated Lithographing Corp., Brooklyn, N. Y.

4 The latest window display for Gillette Blue Blades features the company's radio program, "Cavalcade of Sports." For some time past the Gillette people have been broadcasting blow-by-blow descriptions of the fights both at Madison Square Garden and at the St. Nicholas Arena in New York. The focal point of the motion display, therefore, is the miniature ring with two old-time boxers carrying on a continuous match. The billboard-like poster in the background is equipped with a removable portion which advertises coming features. The mechanical set-up is effectively surrounded by enlarged reproductions of the familiar Gillette package plus actual packets of the blades and smaller cards giving price. Display, Metropolitan Mechanical Display Co., New York.

5 A new display panel providing 16 different copy changes is being furnished agent drug stores by the Nyal Co., Detroit, which saves paper through the use of a newly designed self-container. The self-container is formed by the same piece of material used for the easel when the display is set up in the store. Taped together at the ends and through the middle, the tape is slit for opening and the chipboard container is then bent as scored and marked to be transformed into the easel. The central unit measures 27 by 42 in. when opened to full size. The background is a two-toned wood effect and shelves are provided for general product display. Posters with the various copy changes on turn-over sheets, pointed on both sides to save paper, and the display's spiral binding are lithographed in five colors. Display, Zipprodt, Inc., Chicago.

6 Pat Boyd, Miss Rheingold for 1945, is the attractive lass with the Dalmatian, featured on this seasonal centerpiece for an effective Rheingold window. The full-color semi-cutout plus the dogwood tie in nicely with the seasonal promotion idea while the easel mounted side cards associate the beverage with summery meals. This window display theme is being repeated by Rheingold in both car card and newspaper advertising. The centerpiece is also suggested for interior use after it has served its purpose in the window. Display, Einson-Freeman Co., Long Island City, N. Y.

7 Counter space only 9 in. wide and $8\frac{1}{4}$ in. deep is needed to accommodate the latest silent salesman for Pond's lipstick. A glamorous girl's photograph is mounted above the case which has a transparent acetate window to show the six 49-cent lipsticks. Over each stick is a color sample while suggested shades for different types of complexions for both day and night wear are listed on the base. Dealers particularly appreciate the convenient storage compartment in the back to hold reserve stock. The display as shown here holds the metal-cased lipsticks but it may also be used to hold the all-paper "Dreamflower" cases.

GALLERY

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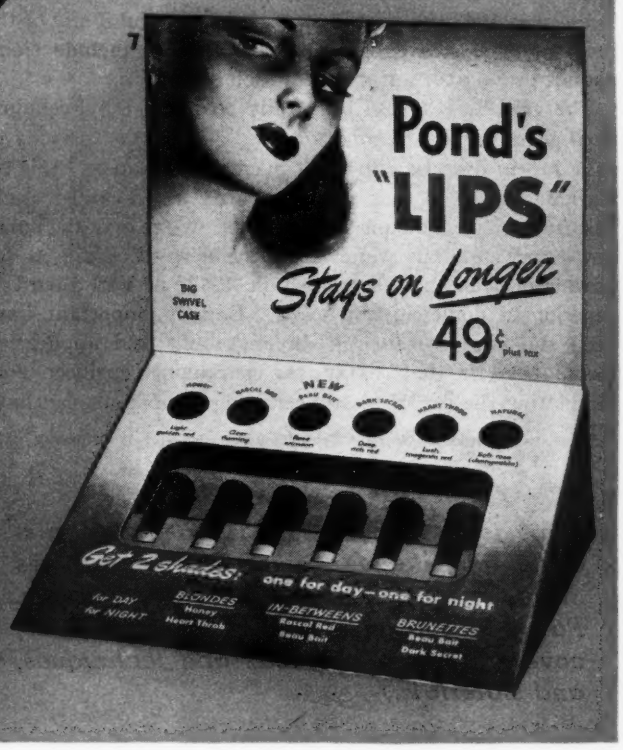


JAN specs

. . . 2. strip coating, tape, containers

PHOTOS, COURTESY SIGNAL CORPS

1—A V3C box being removed from its shipping container in the Pacific—ready to go on its own for more handling and still more storage.

*by Herbert T. Holbrook**

At the time of writing this article, the proposed JAN specification on strippable plastic compounds had not been officially approved. However, it is understood that the proposed requirements will be based on AXS-1167, Revision 2 dated 1 June 1945 and Army-Navy Aeronautical Specification AN-P-117-C. Discussion of these specifications—all provisions of which are identical—seems entirely pertinent, particularly in view of the widespread interest in these materials.

Strippable plastic compounds are definitely a "war baby." The first tentative applications of plastics as a protective coating were made early in 1943. Since then the development has proceeded at, if anything, too fast a pace. Had we foreseen in 1943 the grief in store, it is doubtful if any of the Services would have had the hardihood to include Compound, Protective, Strippable in their repertoire.

The grinning Chinese boy, gaily stripping ethyl-cellulose from gears (in the *Saturday Evening Post* ads) is to many of us a Jap in disguise chuckling over the headaches "this remarkable material that strips as easily as an orange peel" has caused its custodians and sponsors. We're over the hump now—and materials which meet the new specs are as far advanced over those available in 1943 as V1S Board is superior to domestic fibreboard. Equally important have been the improvements in dipping tanks and application techniques—so that today the packaging engineer contemplating the use of plastic stripping compounds can have a great deal more confidence in the results he will obtain.

The improvement in basic products is a good example of industry and the Government working together as a team. Actually the specification in its development from the original Ordnance specification AXS-1167 to its present revision has merely reflected the improvements in the compounds developed by the manufacturers and has established closer laboratory control over testing techniques. The chief function of the Services has been to advise compounders the nature of the deficiencies found in the early materials, both at the point of application and inspection in this country and in overseas depots and to suggest new lines of development for their own research laboratories.

The principal objective of these specifications, as of their predecessors, is to provide the basic requirements for a plastic-type coating that will protect parts against corrosion under the most severe conditions of wartime shipment and storage without the supplementary protective greaseproof and waterproof barriers. By a simple dipping process, parts are given protection equivalent to that of a preservative treatment plus a Method I-A greaseproof and waterproof wrap. Depreservation is accomplished by simply slitting the coating and stripping—in the same manner, if not with the same ease, as peeling an orange.

Under the provisions of the specification, compounds are subjected to two groups of tests. The first is a qualification test to determine the ability to resist corrosion. Coated panels are both cycled for 10 days under conditions similar to those required in the Method I-A cyclic exposure test and subjected to 100 deg. F. and 100% Relative Humidity for 30 days. Evidence of corrosion after these tests is cause for rejection. Physical properties are determined on material "as received" and on the same material after a period of aging at high temperatures, both by measuring plasticity, which indicates resistance to "cut through," and by tensile and elongation tests, which are primarily of significance in determining strippability. Other tests are provided to eliminate

* Assistant Chief, Packaging Branch, Office of Chief of Ordnance, War Dept., Washington, D. C.

(This is Part II of a two-part article discussing the development and the objectives of the new Joint Army-Navy specifications. Part I, which appeared in the June issue, covered general methods and techniques, and materials.)

separation or jelling in dipping tanks and to control the amount of exudation of free oil.

All tests are run for qualification of original formulations. If a compound has been qualified, however, the usual procedure is to run the physical property tests only on production materials compounded in accordance with the approved original qualification formulation.

New butyrate stripping compound—Previous plastic stripping compounds were limited to materials containing ethyl-cellulose. The new specifications, however, eliminates all requirements for ethyl-cellulose content, and provides for two types of compound. Type I is based on the performance of improved ethyl-cellulose-type compounds, while Type II covers a new type of material developed from a cellulose-acetate-butyrate base. This second type has a higher elongation requirement than Type I, a higher plasticity, and a more severe aging requirement. With these improved characteristics, Type II material is in many respects easier to apply and can be used on a wider variety of parts. It is not so satisfactory, however, as the ethyl-cellulose type on small, light articles, due to its greater tendency to "string," and it is considerably more expensive.

There is plenty of room in the specifications for additional types, or for further improvement in those presently prescribed. No specification covering materials offers more challenging possibilities for postwar application. Improvements in the material—and more "know-how" about their application—will open up an unlimited field of application. Plastic stripping compounds are here to stay.

Water-resistant sealing tapes

JAN-P-127 (Tape; Adhesive, Pressure-Sensitive, Water Resistant) had—and will continue to have—a broad influence throughout the entire packaging industry. Pressure-sensitive tapes have come a long way from the days of "bicycle-tire" friction tape, and surgical adhesive tape. Even the complete elimination of crude rubber has failed to slow down the development of pressure-sensitive adhesive tapes suitable for a wide range of packaging applications. These versatile materials are now used to seal deck-loaded tanks and planes; to close spiral-wound fibre ammunition containers; to hold greaseproof and waterproof wrappings in place; to seal off holes and voids of parts dipped in plastic compounds; to cover and waterproof identification labels; to seal paper containers of all types; to reinforce moisture-vaporproof barriers.

The specification covers four types of tapes: Type I is a cloth-backed tape treated with waterproofing lacquers or other coatings to afford maximum resistance to the effects of rain, sun, oil, etc.; Type II is an untreated cloth-back tape, most commonly used to seal ammunition containers; Type III is a heavy-duty, non-cloth-backed material usually made with a backing of cellulose-acetate laminated or coated on paper; Type IV is also a non-cloth-backed tape but of lower strength character. Each type can be supplied in one of three grades based on moisture-vapor impermeability. A maximum of 0.01 gram per 100 sq. in. per 24 hrs. for Grade A; 0.01 to 5.6 grams for Grade B; and no limit for Grade C.

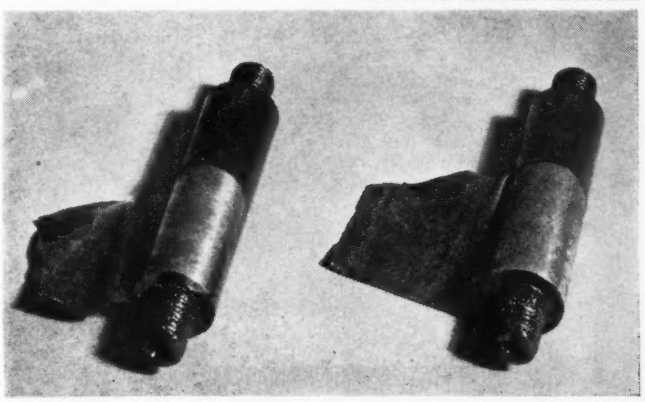
Grade A was included to stimulate the development of tapes suitable for application where maximum resistance to moisture-vapor passage is desired, as in Method II packages. While at this writing no materials have qualified as Grade A, several companies are experimenting with foils and plastic sheets with very encouraging results. Grade B is intended for most general packaging applications, such as carton sealing. Grade C is designed for those applications where MVTR is not an important factor, as, for example, identification label covers.

Type I and Type II tapes are, of course, for heavy-duty application and as such have high strength requirements. The wet and dry tensile is a minimum of 35 lbs. per in. of width, and tear resistance is a minimum of 450 grams.

Type III requires a dry tensile of 25 lbs. and a wet tensile of 10, with a tear of 70 grams. Type IV drops down to a dry tensile of 15, a wet tensile of 8 and a tear of 50. All types must show equal performance against a number of performance tests, most important of which are adhesion, lack of excessive adhesive transfer and resistance to water penetration. The adhesion value is 25 oz. per in. of width measured by a tensile-tester on strips applied both to a steel plate and to its own backing. This value must not drop below 15 oz. after accelerated aging test of 72 hrs. at 140 deg. F. for Types II, III and IV and after 72 hrs. in a Weatherometer cabinet for Type I. After the same aging tests, the

PHOTOS, COURTESY FOREST PRODUCTS LABS.

2



3

2—Non-specification plastic strip coat shows corrosion after 72 hrs. at 100 deg. F., 90% R.H. **3**—*Care is vital in selection and application of suspension cords used for dipping cords. Note corrosion under cord after 35-day test at 100 deg. F. and 90 R.H. Left to right: common cord, wax-impregnated cord, two types of cellophane cord.*

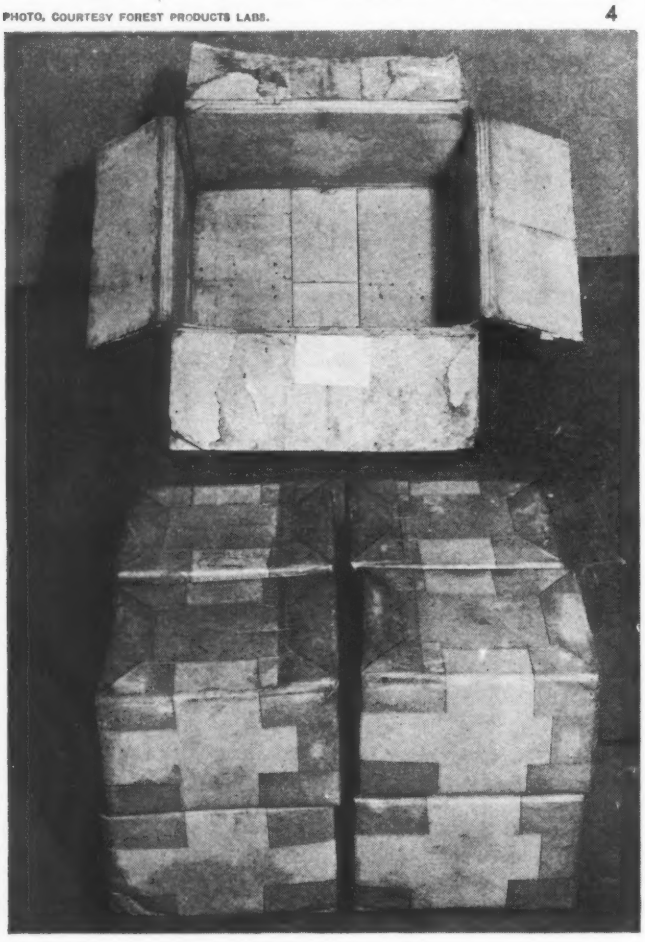
adhesive transfer shall be not less than 25% for any type. The water penetration rate for all types is a maximum of 30 grams for 100 sq. in. in 24 hours.

On the basis of current reports, tapes which meet the requirements of this specification will do an entirely satisfactory job in the field. There has been surprisingly little criticism of the specification—either from suppliers or users—but there has been a very considerable amount of difficulty on the part of some suppliers to maintain the standards of quality established by their original qualification samples. Much of this is due, no doubt, to conditions beyond their control, particularly the uneven performance of components many of which are in critically short supply, but the fact remains that the Services have had to maintain closer inspection over pressure-sensitive tapes than over almost any other packaging material.

JAN-P-128 (Tape; Water Resistant, Gummed) is related to JAN-P-127 in that both provide for a water-resistant tape. JAN-P-128 tapes, however, utilize a water-resistant adhesive that must be moistened with solvent before application. It is designed primarily for application as a sealing tape for V- and W-board boxes. Although no restrictions are imposed on the backing, all tapes approved to date utilize asphaltic-type waterproof paper or wet-strength krafts. These do not have the versatility of the pressure-sensitive tapes, but are much more economical and currently more available. When properly applied to V- or W-fibreboard, the tape will adhere and provide a strong closure even after prolonged exposure to high humidity or even rainfall. In its present stage of development, it is slower and more difficult to apply than ordinary gummed tape and has the additional disadvantage of requiring special moistening solvents. These, however, are deficiencies that are by no means insuperable and if there is a future for V- and W-board containers there is assuredly an equal future for water-resistant gummed tape.

4—Showing excellent condition of inner cartons sealed with water-resistant gummed tape after rough handling, 24-hr. immersion test and additional rough handling.

PHOTO, COURTESY FOREST PRODUCTS LABS. 4



The present specification is an almost verbatim copy of Ordnance Specification AXS-1213. It provides for a dry tensile of 38 lbs. per in. width and wet-tensile of 4 lbs. This wet-tensile is admittedly lower than is desirable but is the highest that can be established on the performance of currently available tapes. The specification further requires that the tape show 75% fibre failure when stripped from V3S all-kraft fibreboard within one minute after application and 200 grams wet-adhesion value after 15 minutes of immersion. Water resistance of 12 hrs. is measured by the same test as for waterproof barrier materials in JAN-P-125.

Group III—finished containers

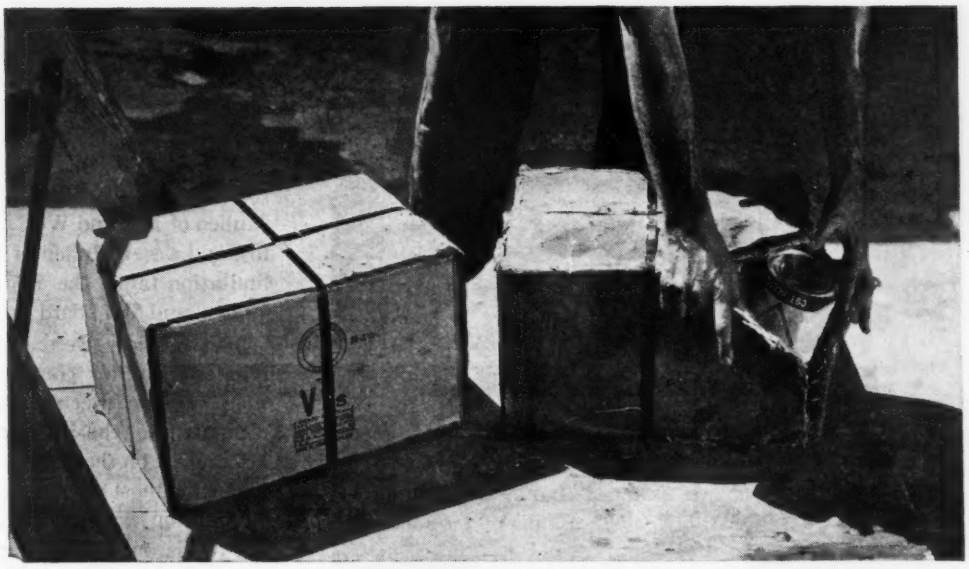
The third group of specifications is primarily concerned with the application of more conventional materials—wood, metal and paper—to finished containers.

The wood container group covers three basic box types (cleated plywood, wirebound and nailed wood boxes), sheathed and unsheathed crates, slack barrels, plywood drums and slack kegs, together with the requirements for their component materials. All, except unsheathed crates, are based on sections previously included in U. S. Army Spec 100-14A.

Designs prescribed for box and barrel-type containers are those which have over the course of years proved to be most practical to manufacture and most able to withstand severe handling and storage. They are, therefore, necessarily limited in variety and are readily identified by all who make or buy wood-type boxes. What is important is that in these specifications, the package designer is given clear and precise information to guide him in his selection of the most suitable style, material, assembly and reinforcement for his product. They provide, in other words, in explicit terms the same general minimum requirements for wood containers that Rule 41 provides for fibreboard containers. Since they are geared to war shipping needs, they go beyond the requirements for safe peacetime domestic shipment. Nevertheless, it would require but little adjustment to bring them into focus for postwar transportation needs and—who knows?—perhaps our common carriers will demand the kind of control these specifications can provide.

The crate designs used in war shipments provide a much more important new addition to packaging technology. The proposed JAN on sheathed crates has not, unfortunately, been approved at the time of this writing by all the services, so if you have a hot problem of shipping a 25-ton hydraulic press to Hindustan and want to use a sheathed crate, we must still direct your attention to Section IV of U. S. Army Specification 100-14A.

JAN-P-132 (Crates; Unsheathed, Wood, Nailed) has fared better and is now at the printers. This new specification contains the answer of the Services to a very practical question: Why should items designed for outdoor use even under the worst conditions in the Pacific be packed in completely sheathed crates for shipment? The fact of the matter is, of course, that there are a great many important assemblies, frame members, and other items which are of a rather indestructible nature and do not need protection against salt water spray, rain and snow. For such items this brand-new specification will fill a great need, for open-type crates, properly



5—*Photo taken in European Theatre clearly demonstrates superiority of V-board over domestic fibreboard after severe handling and storage.*
6—*These well-designed fibreboard containers were considered adequate for overseas shipment. Even V-board can't take it, however, when the load is non-supporting.*

PHOTO, COURTESY SIGNAL CORPS

applied, can replace a large number of fully sheathed crates and large wooden boxes with considerable savings both in labor and in lumber.

The specification provides designs for loads up to 2500 lbs. in weight and for sizes up to a maximum of 12 ft. long by 4 ft. wide and $5\frac{1}{2}$ ft. high. Structural details are designed to withstand superimposed loads that may be encountered in the holds of ships or in high stacking while in storage.

Three styles are covered. Style A utilizes three-way corner structure and is suitable for loads up to 500 lbs. maximum. Style B is for the heavier, larger items and utilizes a combination of three-way corner and box-style crate designs. Style B crates can be built in prefabricated panels which will make them particularly useful for large scale operations. Style C is designed for flat loads such as pipes, armor plate, etc., and are limited to 500 lbs. maximum loads and 24 in. maximum height.

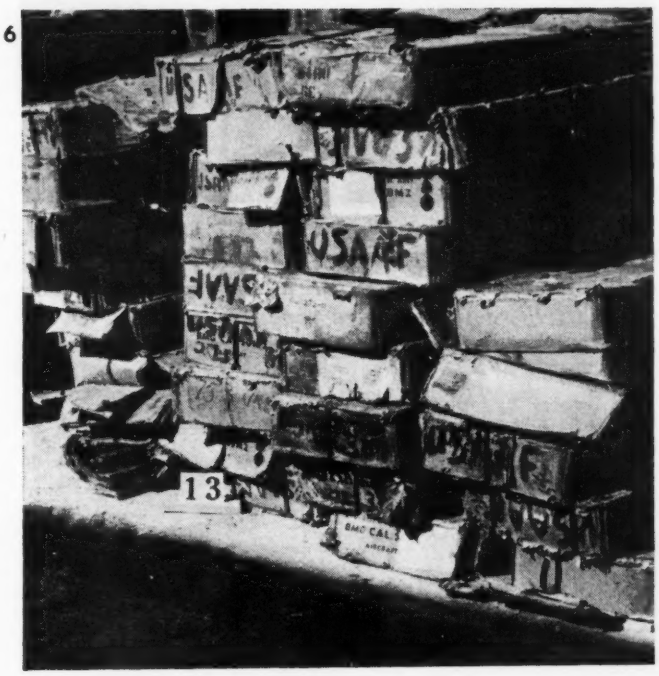
When, after the war, the hazards of export shipment are reduced, this specification will undoubtedly have extensive use in the export packaging industry when the dangers of extended exposure to the weather are eliminated. Construction details of this new specification should also have a decided effect in the design of post-war domestic crates.

JAN-P-103 (Boxes; Wood Cleated Solid Fibreboard) covers the only type of combination wood and paper containers permitted by all Services for overseas shipment. Wood-cleated fibreboard is not, of course, a new construction but the prewar combinations were quickly found inadequate. The new specification overcomes the earlier deficiencies by requiring highly water-resistant fibreboard, a rigid nailing and stapling schedule for fastening the fibreboard to the cleats and adequate cleat construction and location.

Cleated fibreboard boxes have not been used extensively to date except for air shipments. Their use is increasing, however, and the new specification offers highly interesting possibilities for postwar development.

JAN-P-108 (Boxes, Fibreboard [V-Board and W-Board] Exterior and Interior Containers) is, of course, the outstanding paper container specification. It is, in fact, one of the most important of all the JAN specifications, ranking with JAN-P-121 and 131 in its technical effect on war and postwar packaging and outstripping them in dollar volume involved.

When export shipment of vast quantities of war supplies began back in 1941, thousands of tons of subsistence and other items were shipped in conventional domestic fibreboard.



The results were disastrous. The ordinary 200-lb. and 275-lb. boards simply were not designed for the kind of handling, the terrific storage conditions, to be found in any of the theaters. And yet to have replaced these fibreboard containers with wood, or to have wrapped them in waterproof paper and overpacked them in wood, would have been a conversion far beyond the capacity of the wood-container industry. The problem was put squarely up to the fibreboard industry, with the Office of the Quartermaster General acting as chief sponsor for the Armed Services. Within a miraculously short time, industry came up with the answer: Water-resistant solid and corrugated fibreboard capable of withstanding the most severe condition of shipment, handling and storage provided only that the contents were such as to provide support to all faces of the containers.

The requirements for these boards were first contained in OQMG Specification 94 and later were incorporated in Section VIII and Section XXIII of 100-14A. Symbols were established for various grades of board suitable for exterior containers—V1S for solid fibreboard with a dry Mullen of 750 lbs. and a wet Mullen (after 24 hrs. immersion) of 500

7

7—*The failure of these wood boxes was the direct result of the inadequate bracing of a non-supporting load.*

8

8—*Commercial export packing by contractor. Failure due to non-specification box, inadequate interior bracing.*

lbs.; V2S for solid fibreboard with a dry Mullen of 550 lbs., and a wet Mullen of 500 lbs., and V3S and V3C for solid and corrugated fibreboard, respectively, with a dry Mullen of 400 lbs. and a wet Mullen of 150 lbs.

Minimum caliper, resistance to delamination and maximum weight limits were prescribed, the last ranging from 70 lbs. for V1S and V2S for solid packs down to 30 lbs. for V3S and V3C for semi-supporting loads. Box construction was limited to the five basic styles—regular slotted, center special slotted, full-telescope, special full-flap slotted, and full overlap slotted. Provision was further made for sleeves to cover top and bottom flaps and ends, for use particularly on heavier loads of the semi-supporting type. such as canned goods.

The principal change in JAN-P-108 was to establish symbols and more practical controls over the lighter grades of water-resistant fibreboard. While these lighter grades have limited application for exterior containers, they are indispensable for interior containers overpacked in wood boxes. Two grades are covered—W5C and W5S for corrugated and solid fibreboard having a dry Mullen of 275 lbs. and a wet Mullen of 100, and W6C and W6S having a dry Mullen of 175 lbs. and a wet Mullen of 50. In accordance with the weight limitation table, the W5 boards are suitable for loads up to 40 lbs., and W6 board up to 20 lbs.

The Services were slow to realize the need for water-resistant interior containers, failing to appreciate that at some point between the point of packing and the point of ultimate use, the interior containers are removed from the box and are on their own—perhaps for a dozen more handlings, under the most adverse conditions of rain and high humidity. In addition, waterproof case liners may become ruptured, or fail to discourage moisture penetration, with the result that after a few weeks of open storage in tropic theaters domestic fibreboard loses all strength and in time becomes a soggy corrosive mass. All inner protection is lost and any further handling causes complete breakdown of protective wrappers and preservative coatings.

It is difficult now to appraise the postwar significance of these boards in terms of total consumption. Much will depend on the wood-container industry's success in developing all-wood or paper-and-wood combinations that can successfully compete with them. Without such developments, V- and W-boards threaten many of the last redoubts of light-duty wood containers—for export shipments, for refrigerated consumer goods, for re-usable bottle carriers and for a host of other important container uses where resistance to rain and high-humidity are primary considerations.

JAN-P-120 (Cartons, Folding Paperboard) and JAN-P-133 (Boxes, Set-up, Paperboard) are less revolutionary in character. Carefully prepared by the Office of the Quartermaster General in cooperation with industry, they supply hitherto lacking controls over board constructions for commercial types of folding cartons and set-up boxes. Tables are also provided to establish the required relationship between caliper of board and the weight and size of the contents. For packaging of spare parts, special tables are included which give minimum bursting strength requirements in addition to weight, size and caliper relationships.

There has been some justifiable criticism of the spare-parts table in JAN-P-120, and steps are now being taken to increase the strength of board for heavier loads and to raise the permissible weight limit from 5 lbs. to 10 lbs. These are minor changes however and basically both specifications will continue to provide indispensable data for the package designer—both for war and for normal peacetime products.

JAN-P-117 (Bags, Interior Packaging) provides for four classes of bags suitable for interior use: Class A—greaseproof only; Class B—waterproof only; Class C—greaseproof and waterproof and Class D—greaseproof, waterproof, and moisture-vaporproof. These class descriptions are self-explanatory and relate to values as determined in other JAN packaging material specifications.

The greaseproofness of Classes A, C and D is accomplished by the use of inner plies or laminations which comply with Grade A barrier-material requirements in JAN-P-121. Similarly, waterproofness in Classes B, C and D bags is determined by the same method as prescribed in JAN-P-125 and is pegged at a minimum of 12 hrs. (*Continued on page 166*)

Wanted . . . a plastic dip-coating for cartons

Packaging and plastics researchers have been invited by the Office of The Quartermaster General to participate in a project to develop a plastic coating for paperboard packages which will afford a higher level of protection than the wax compounds now in use.

Actual work on the project will be headed up at the Institute of Paper Chemistry, Appleton, Wis. (through the National Academy of Sciences), under the direction of Dr. Harry F. Lewis, and will be coordinated with the study of plastic films now under way under the direction of Capt. William H. Aiken at the Brooklyn Polytechnic Institute, Brooklyn, N. Y.

Invitations to participate in the program have been extended to any research chemists or any manufacturers making either a thermoplastic or a thermosetting compound which will effect a waterproof and highly water-vapor-resistant coating on paperboard.

In setting forth the need for the project and the possible materials which it may develop for packaging, the Quartermaster Corps pointed out that various plastics have been utilized in the form of thin film sheeting as wraps and bags during the past 10 years and that, while the recent developments in this field have produced packages exhibiting improved functional characteristics, the limitations applying to wraps and bags made of thin film remain.

Fully aware that new plastic materials are being developed almost daily, the Quartermaster Corps is seeking, through the new project, to find a plastic with all or most of the following characteristics:

1. It must be odorless, tasteless and non-toxic. In the process of applying the dip coating, no undesirable odor or flavor can be transmitted to the contents of the package. This requirement has in general prohibited the use of plastics having hydrocarbon solvents in the dipping liquid.

2. A package dipped in the plastic should withstand storage at a temperature of 140 deg. F. without blocking. There will be conditions where cases of coated cartons are stacked in holds or in freight cars where a temperature of 140 deg. F. will obtain and where there is considerable pressure transmitted to the cartons in cases, tending to block or weld them into a solid mass. At this temperature it is also necessary that no solvents be driven off to contaminate the contents of the carton. The coating must be stable in every respect at this temperature.

3. At a temperature of minus 20 deg. F. the coating must be capable of withstanding the rough handling encountered in unloading, transporting and storing military supplies. The coating should not crack, chip or separate from the base paper and preferably it should not lose all of its pliability. It should provide positive waterproofness to the package after various rough handling tests at this low temperature.

4. The coating should be impervious to the penetration of grease and oil. No penetration should be observed in less than 1,800 seconds when tested in accordance with TAPPI T-454-m-42.

5. The water-vapor transmission rate, when measured in the General Foods Moisture-Vapor Transmission Cabinet (GFMVT method) should not exceed 0.1 gram per 100 sq. in. per 24 hrs. Present coatings have an average transmission rate of approximately 0.25 gram, and it is desired to lower this rate substantially. In view of the fact that this film often is the primary moisture-vapor barrier in a package, this characteristic is of major importance; and, while films having transmission rates of 0.25 are definitely of interest to the Quartermaster Corps, those exceeding this rate will be excluded from further consideration.

6. The compound should have an application temperature of not more than 230 deg. F. This figure is admittedly somewhat arbitrary, but it is considered desirable on the basis of present dipping operations to have the temperature at which the dipping is done range between 180 deg. F. and 210 deg. F. Satisfactory performance is obtained at 210 deg. F. when the time of dwell does not exceed five seconds. This critical temperature will vary with different commodities, but the coating will be used on ration packages containing a variety of components such as biscuits, cereals, fruit bars and chocolate, as well as canned meats.

7. At the temperature of application, the compound should have a sufficiently low viscosity to permit draining of the excess material from the package so as to effect economy in its use. It should not be stringy, but rather drip cleanly from the package. It should also be stable for long periods (up to two weeks) of standing at the temperature of application.

In addition to the above enumerated characteristics, the Army seeks a plastic-dip coating which must have good resistance to tearing and abrasion, high bursting strength and good tensile strength; is stable when exposed to both salt and fresh water; is impervious to gases; has good resistance to the penetration of insects; is "unattractive" to rodents; is stable under field storage conditions up to 24–36 mos. under all weather conditions.

Preferably, the coating should be transparent, according to the "ideal," but a translucent material would be suitable if it permitted the printing on paperboard to be reasonably legible after application of the compound.

Because, if adopted, the coating would be applied to mass production, it should be adaptable to present production lines—at as high a rate as 60 cartons per min.

In order to withstand long periods of storage in tropical areas, it is desirable, according to the Army, that the coating be of a nature that "does not readily support the growth of mold, mildew and fungus."

Other desired characteristics include a dull finish, noncombustibility, neutral acidity and smoothness of flowing to assure the bridging of minor openings in a seal-end folding carton.

Packaging or plastics organizations wishing more complete information may write Dr. Lewis at the Institute of Paper Chemistry.

New Orleans
pictured on labels

Among the famous cities of the world, none is more closely associated with good things to eat than fabulous New Orleans. It was thus a "natural" for Elmer, one of New Orleans' leading candy-makers, to select the city itself as the package design motif for its typical New Orleans confections. So decided O. B., Morel, August, Lennie and Alphonse Elmer, the five brothers who, as fast as wartime restrictions allow, are making Elmer candies nationally known.

The New Orleans pecan praline is known all over the world, its fame spread by the thousands of tourists who each year enjoy, and generally share with those back home, this taste treat of the old South. Elmer packs Creole pralines in a souvenir container conveniently packaged for easy shipment. The colorful and attractive package, containing one dozen pralines, shows scenes of New Orleans' Vieux Carré, or French quarter, where this delightful confection was first originated. Also part of the design shows figures in Mardi Gras costumes, a steamboat along the levee and a sugar plantation scene. The design, made from an original sketch by a New Orleans artist, is lithographed in full color on the label attached to the shipping carton. Both cartons and labels are produced in New Orleans.

Born of its reputation for excellent French-drip coffee, New Orleans has developed another popular candy treat, Coffee candy. This novelty confection is also packed in a souvenir container of 1-lb. weight—a round, squat, neat little package blooming with alluring scenes of the better-known spots of interest in the French Quarter—the famous iron balconies and patios, the Cabildo, the Cathedral of St. Louis, the Old Absinthe House. These labels too are New Orleans made.

Praline package is a composite design of river steamboats, sugar plantations and people in Mardi Gras Costumes.

Note iron lace-work motif associated with old iron balconies. At top, complete label shows familiar scene.

Another featured Elmer product is "Heavenly Hash," packed in 1-lb. boxes and sold by confectioners, drug and department stores throughout 38 States.

Gold Bricks, another Elmer product, is a 5-cent seller. Each Gold Brick bar is wrapped in a distinctive gold-color wrapper and packed 24 to the box.

In addition to candies, Elmer is now marketing another product, "Chee-Wees," a cocktail snack, packed in both pocket-size cardboard boxes and large, home-use glass jars. A well-received recent innovation has been the switch from a taller container to a squattier, round glass container, ideal for subsequent use as a refrigerator jar.

Practicality in the design and packaging of all Elmer products has been a guiding principle. Not only has the appearance of the package been keyed to the section with which the product is associated, but each has been developed with a thought for the customer's convenience in carrying, in shipping, and where feasible, for possible after-use.

CREDITS: *Lithographed labels, Praline package, printed by Garcia Box & Printing Co., New Orleans. Coffee candy label design, Tom Burke; printed by Broome Printing Co., both New Orleans. Broome Printing Co. also supplies labels for Elmer's Chee-Wees. Gold Bricks box designed by J. J. Wolf Studios, New Orleans. Paper containers, Crescent Paper Box Co., New Orleans; Old Dominion Box Co., Charlotte, N. C.; Sutherland Paper Co., Kalamazoo, Mich. Gold Brick wrapper, Crystal Tube Corp., Chicago. Glass jars, Hazel Atlas Co., Wheeling, W. Va.*

"WHERE ARE THE SNOWS OF YESTERYEAR?"

We don't believe in looking backward on past successes. Our gaze is directed constantly toward the future.

However, if we had started producing packages yesterday, you might not have the same confidence in us that you have when you know that Burt has been making containers since 1886.

Our present automatic production is a far cry, indeed, from those early days of hand-made packages. Today, we rely almost exclusively on our specially designed automatic equipment to produce uniformly high quality containers in the millions for some of the largest and most important mass packagers of drugs, cosmetics and other products.

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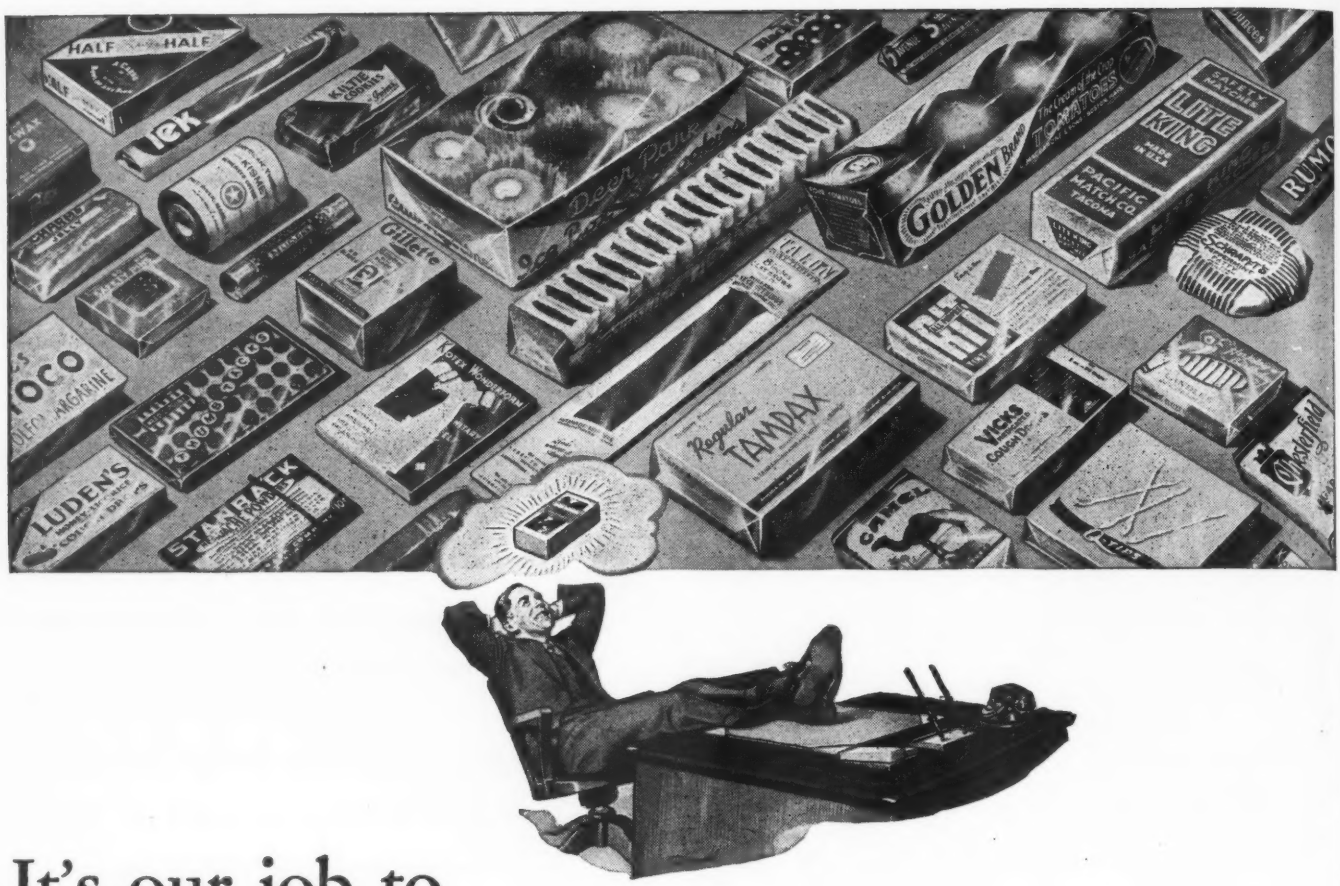
CANADIAN DIVISION:

Dominion Paper Box Company Ltd., 469-483 King St. W., Toronto 2, Canada



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In planning to improve your package, or in seeking lower costs, we believe it will pay you to consult us. For we can give you the benefit of exceptionally broad experience gained in serving America's leading manufacturers.

Many modern improvements in packaging have been made practical for volume production by our machines. Cellophane is a good example. When introduced, the use of this sales-attracting material was limited to products wrapped by hand; no machine then available could handle it. We met this need in short order with cellophane wrapping machines that were quickly installed by manufacturers of cigarettes, candy, food, drugs, etc. . . . Today, our engineers are likewise busy adapting our machines to the many new wrapping materials recently developed—*materials which will play an important part in postwar packaging improvements.*

The easy-opening device, that enables you to zip the wrapper off a package without fumbling, is another development pioneered by us, and one which will be used increasingly for many types of packages.

Printed material in roll form, which makes notable savings over the cost of cut-to-size sheets, is now going on many products, thanks to our perfection of the electric eye registering device. And the dream of having one machine wrap several different sizes of packages has been realized by many a manufacturer through the use of our *quickly adjustable* wrapping machines.

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CHARLES A. SOUTHWICK, JR. TECHNICAL EDITOR

Insects . . . their relation to packages and packaging materials

*by Dr. E. O. Essig**

INTRODUCTION—*In the early days of the war the Quartermaster Corps prepared packaging specifications for hundreds of subsistence items for shipment to all parts of the world and, while it was possible to evaluate the problem of infestation which would be encountered in the tropics, there were no authoritative data on the performance of flexible packaging materials when they were exposed to dense insect populations. Rigid packaging materials were not available for all commodities in 1942 and at the present time these same problems of supply continue to require the use of flexible packaging materials in substantial volume under conditions where exposure to infestation is inevitable.*

Some food processing industries handle products which are highly susceptible to infestation of two types. One phase of the problem may be identified as internal infestation where no penetration of the package takes place. Various control measures are possible to prevent the development of insects within the sealed package and these have proved effective for the handling of Army subsistence. The second type of insect damage may be considered as external infestation. A native insect attacks the package and penetrates the contents. With huge stockpiles of food all over the world this consideration becomes a major problem for the packaging technician. Very few factual data on the subject of external infestation were found to exist in the industry.

In order to evaluate fully the insect resistance of the many flexible packaging materials employed in the preparation of subsistence items for worldwide distribution, arrangements were made by the Military Planning Division of the Office of The Quartermaster General with the University of California to have Dr. E. O. Essig study the problem. At this time it is possible to publish Dr. Essig's comprehensive report of 6 April 1945. This report is a significant contribution to the art of packaging. Studies are continuing and will in the future, as in the past, exert a considerable influence upon the packaging policy of the Quartermaster Corps.

The insects which infest stored food products and attack packages of all kinds are among the most common, widely distributed and ubiquitous of all insect pests. They share at least five important characteristics which combine to make them unusually difficult to control and which account for their widespread occurrence: (1) an especially wide range of tolerance for different temperatures and humidities, especially moisture content of food materials (most species can survive in foodstuffs with a moisture content far below their optimum) and although most of these insects thrive best in tropical and subtropical regions, man maintains ideal conditions, even in temperate countries, in buildings, warehouses and food storage units; (2) most of the species involved have a wide range of food habits, many including in their diet the majority of dry food and drug products of plant and animal origin; (3) nearly all of them reproduce more or less continuously under favorable conditions, may produce several generations a year (some every six weeks or two months) and many are long-lived and may continue to reproduce over a period of two or three years; (4) some of the most important species can survive in the adult stage for relatively long periods without food, a fact which favors accidental transportation from one part of the world to another even in the absence of suitable food materials and (5) the small size of most species may cause them to be overlooked and their presence remain undetected until large populations have been built up.

Aside from direct infestation of foodstuffs through penetration of packages, insects affect the packaging problem in the following ways: (1) *by destroying moisture-, vapor- and gas-tightness* (especially important in preservation of dehydrated products) where insect penetration, even without infestation, may cause rapid deterioration of the product and dried fruits and other products which are packaged in a gaseous atmosphere; (2) *by permitting entry of other insects, mites, molds, bacteria*, etc., with resulting destruction of the contents; (3) *by reducing strength of package*, providing greater opportunities for breakage, bursting, tearing, leakage, etc., and (4) *by providing foci for further infestations*, especially in warehouses, galleys, holds of ships, freight cars and other food storage and transportation units.

One of the most striking aspects of the problem of the relation of insects to packages is that they will penetrate pack-

This is a progress report on the continuation of research which was first described in the article "Penetration of Packaging Materials by Insects," by Drs. Essig, W. M. Hoskins, E. G. Linsley, A. E. Michelbacher and R. F. Smith, in the July, 1944, issue of* MODERN PACKAGING. *The introduction has been written by the Military Planning Division of the Office of the Quartermaster General.

* Division of Entomology and Parasitology, University of California, Berkeley, Calif.

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1—*Selection of cadelle larvae for use in test units.* 2—*Typical cultures used in tests. Jar on left contains rolled barley used as food for rearing cadelle. Jar on right contains dog biscuit for drugstore beetle.*

ages regardless of whether or not they contain foodstuffs or whether such foodstuffs as might be contained in the package provide a suitable medium for their development. They enter packages (1) *in search of food* (i.e., the sawtoothed grain beetle, flour beetles, moth larvae, etc.); (2) *to form pupal cells* for transformation from larva to adult (i.e., the cadelle); (3) *to lay eggs* (the granary weevil, rice weevil and lesser grain borer practically always bore holes in which to place their eggs); (4) *to eat the packaging material itself* (termites, silverfish, etc., feed directly on cellulose materials such as paper, fibreboard, wood, etc.); (5) *because of some contaminant present on the outside of the package*, as flour from a broken sack, debris from the floor of a warehouse, hold of a ship, or other storage unit and (6) *for various unknown reasons.* Thus serious injury to packages may not necessarily bear any relationship to the contents of the package.

Factors influencing penetration of packages by insects

The various factors in the environment of a package are important in influencing penetration of insects. Obviously a package in an environment heavily infested with insects is in greater danger of penetration than one in clean storage. The risk also varies with the kind of insect present. Consequently all the factors that influence the abundance and kind of insects in storage are indirectly concerned with penetration. The most important of these factors are temperature, moisture and kind and quality of food. In general, we can recommend clean, dry, cool conditions as the safest storage. Warehouses, ships, box cars, depots, etc., should be periodically inspected and treated as necessary. Susceptible packages in so far as possible should not be placed where grain, flour, wool, dried fruit or similar products have been stored as these materials may have been heavily infested with stored product insects. Even small amounts of food such as accumulate from breakage are a serious menace. Moreover, we have some evidence that packages contaminated with food material are more susceptible to penetration.

Different types of storage places are characterized by different kinds of insects. For example, warehouses which have been used for grain or dried fruit will usually be infested to a greater or less degree with such insects as the cadelle, granary weevil, rice weevil, sawtooth grain beetle and flour beetles. Packages placed in buildings with poor foundations or directly on the ground may be attacked by termites. In warmer areas and in heated buildings in cooler areas, cockroaches and silverfish may be present. These various insects have different abilities for penetrating packages and serious penetration may frequently be related to particular types of storage.

In addition to this obvious effect of the insects, the physical and chemical factors of the environment have a marked effect on penetration both from the standpoint of the package and the insect. The effect of these factors on the package itself has not been studied in this laboratory as such information is available elsewhere. A package that is subjected to conditions beyond its limits of resistance to immersion, heat, cold, sunlight, humidity, etc., will in general be more readily penetrated. These same factors of environment are also very important in their effect on insects. This effect is generalized in the statement that optimum conditions for the growth of the insects are also the optimum conditions for penetration. We have studied some of these factors under laboratory conditions and the results are summarized below.

Temperature—Because insects are cold-blooded organisms, the temperature of the environment has a profound effect upon their activities. For most practical purposes, one can say insect activity is directly correlated with changes in temperature between minimum and maximum effective points. The lethal points at which death ensues are beyond the limits. These various points are influenced by other factors such as moisture and light and they also vary with the species. The ability of four species of insects to penetrate du Pont 300 MST cellophane at six different temperatures is given in Table I.

TABLE I

Insect	*Days to Penetration*					
*Temperature**	*52° F.*	*63° F.*	*75° F.*	*80° F.*	*85° F.*	*95° F.*
Granary weevil adult	91	28.8	13.4	9.2	11.2	Not penetrated
Rice weevil adult	Not penetrated	7.5	2.4	2.6	4.4	14.0
Cadelle larvae	14.6	2.9	1.5	1.0	1.2	3.2
Lesser grain borer adults	Not penetrated	4.1	2.5	1.6	1.3	1.5

* From the table it is seen that the temperature favoring most rapid penetration varied from species to species. The optimum temperatures for penetration are very close to the optimum temperatures of the insect. In general the maximum penetration occurs between 75 and 85 deg. F.

Moisture—The moisture content of food and the humidity

of the atmosphere directly affect the activity of insects. The stored products' insects with which we have been particularly concerned are adapted to extremes of moisture and humidity. Our conclusions based upon studies of the ability of cadelle larvae and granary weevil adults to penetrate double wax-dipped K rations and other materials at various humidities show that these insects are able to penetrate over a wide range of relative humidities (18–87% R. H.). In general, the higher the humidities up to 85% R. H., the greater the number of penetrations. The presence of food also increases the amount of penetration, probably due to the greater survival of larvae in presence of food (Table II). Although the number of penetrations at the highest humidities is not as great as at intermediate humidities, the destruction is frequently greater due to the penetrations allowing the entrance of mites and molds.

TABLE II—PENETRATIONS OF CADELLE LARVAE IN THE DOUBLE WAX-DIPPED K RATION CARTON

Humidity (% R. H.)	*Food Present*		*Food Absent*	
	Units penetrated	*Total penetrations*	*Units penetrated*	*Total penetrations*
33	3 out of 5	7	1 out of 5	1
47	....	..	4 out of 5	5
71	5 out of 5	9	3 out of 5	8
85	4 out of 5	5	2 out of 5	4

Tests with some of the other factors have also been considered. High concentrations of carbon dioxide or ammonia stupefy or kill the insects. Light in very preliminary tests did not seem to influence the amount of penetration by cadelle larvae. Although not complete, all our data indicate that the optimum conditions for general activity are the optimum conditions for penetration.

Packaging materials

The relative insect resistance of various packing and packaging materials is frequently very difficult to establish. This is due in part, at least, to the difficulty of evaluating negative evidence. The varying characteristics of the insects themselves and the varying uses of the materials complicate the problem. A material which is very resistant to one species of insect may be valueless against others or, on the other hand, a change in package construction may greatly alter insect resistance. Our results have indicated, however, that a material which is resistant to severe penetration by the cadelle will also be resistant to other insects.

None of the so-called substitute materials which have been tested in our laboratory to date can be considered truly insect-proof. All materials have been penetrated to a greater or lesser degree. Through the use of a rather severe and arbitrary technique for testing sheet materials and the accumulation of data from many tests on various materials in package form, we can make some generalizations on the relative insect resistance of these materials.

Metal—Although metals are commonly thought of by the layman as being very resistant to insects and other borers, many are not. Lead is easily penetrated by many insects and is commonly reported in the literature as being damaged by insects. Among the numerous lead materials which have been damaged are bullets and cartridges, lead roofing, lead piping, lead vats and telephone cables. In our tests materials laminated with lead foil showed little resistance to penetration by insects and cannot be considered "insect-proof."

Aluminum is generally considered to be resistant. However, in tests conducted in our laboratory with thin aluminum foils ranging in thickness from 0.001 in. to 0.00035 in. and variously laminated to cellophane and sulphate paper, cadelle larvae were able to penetrate all materials when a fold was present. Zinc sheets have been penetrated by certain borers, but in general are resistant. Comparative tests of various metals with *Scobicia declivis* LeConte, the notorious "lead-cable borer," have indicated thin sheets of copper, zinc and steel are not penetrated. The "tin cans" of industry to our knowledge have not been penetrated by insects. The

3—Setting up unit test of individual packaging materials. Circles of test material shown are cut slightly larger than mouth of jar. A ring cut from a flat Mason top serves as spacer between material and jar closure. Three cadelle larvae are placed on the paper in the arena thus formed and the unit closed by the screw ring. 4—Moisture-testing equipment used in studies of cereals and dehydrated foods. Cabinet to left is vacuum oven for determining moisture content of dehydrated foods; door to vacuum chamber is removed to show sample pans on shelves. Instrument in center is a coffee mill converted to grinding of dehydrated foods and grains prior to making moisture determinations. To right is a Brown Duvell moisture tester, which is standard equipment for use in determining the moisture present in grains and flour.

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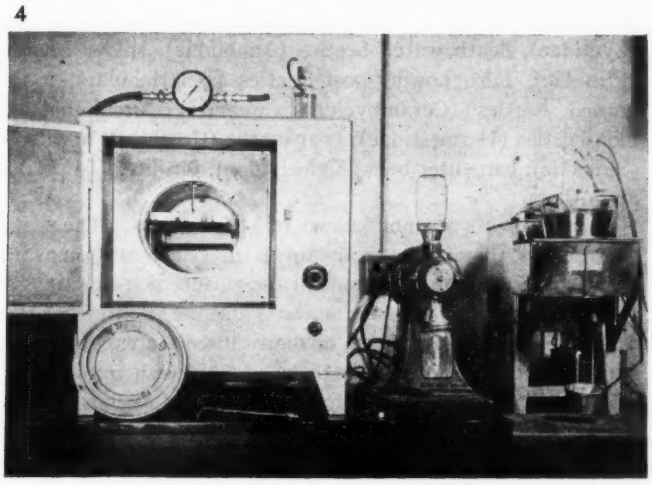

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5—*Test of K ration in large garbage can unit. Individual K rations are placed in gallon jars, insects are introduced and jars closed by cloth and metal ring. Insects are replaced from time to time according to nature of test. Desired R. H. within can is maintained by saturated salt solution held in Pyrex tray immediately over jars. Can is covered with four layers of muslin and closed by tight metal lid to exclude light and maintain humidity.*

quicksilver lining on mirrors, silverplate and gilding have occasionally been damaged by certain ptinid beetles.

This damage by insects to metals is usually accidental and has generally been due to the metal blocking the path of a burrowing adult or larvae. However, in a few cases insects have made direct attacks on metal and caused serious injury, the most important case of this type being the extensive damage to the lead-sheathing of aerial telephone cables in Australia, China, South America, Southern California and other parts of the world. Many kinds of insects have been involved in damage to metals. They include powder-post beetles (Lyctidae), death watch beetles (Anobiidae), spider beetles (Ptinidae), false powder-post beetles (Bostrichidae), long-horned beetles (Cerambycidae), weevils (Curculionidae), hide beetles (Dermestidae), goat moths (Cossidae), horntails (Siricidae), carpenter bees (Xylocipidae), termites (Isoptera) and others.

Glass—Insects are not known to attack glass. The glass container is, therefore, as resistant to insect penetration as its closure. The insect resistance of the closure is a function of the resistance of the closure material and the tightness of the seal. The immature stages of many insects are very small and are capable of working their way through unobserved cracks. Screw-top closures frequently work loose enough to allow penetration. Cork, paper, wood, rubber, thin metal foil and cellophane closures are easily penetrated by insects.

Fibreboard—Fibreboard is not insectproof. Its resistance to insects apparently increases with the thickness and surface hardness. If a fibreboard carton is to be resistant, it must be carefully designed and machined to eliminate as many folds and creases as possible. The fewer the folds and joints, the fewer the opportunities for penetration. A fibreboard carton without a proper coating is easily entered by insects at the corners and along the flaps. For example, the strong, well-constructed V-2 cases show no resistance to insects. Wax-dipping greatly increases the insect resistance of fibre cartons. It not only increases the resistance of the fibreboard itself but eliminates many of the cracks, folds, etc. One of the most satisfactory substitute packages tested to date is a fibreboard carton double-dipped in a thermoplastic wax (e.g., Darex Thermoplastic Coating No. P-16). The material known as "sandboard" is also very resistant to insects but needs adequate seals. The biggest problem with most fibreboard cartons is proper sealing.

Wood—Wood is penetrated by numerous insects. Properly treated wood (e.g., creosote under pressure) may be quite resistant to insects, but again the difficulty is in making satisfactory seals at joints and corners. All-wood cases examined by us to date can be easily penetrated by insects. Properly constructed insect-tight wood containers would be difficult to make on a large scale.

Plastics—Very little is known of the insect resistance of plastics. The hardness and chemical resistance of some would indicate great resistance.

Protective Wrappings—Of the great number of protective wrappings now available only a relatively small number have been tested in this laboratory. However, most of the important types have been considered. All the *cellulose derivatives* tested to date have been easily penetrated by the cadelle larvae. In addition, many of the other stored-products insects penetrate them. The characteristic of these products apparently giving them resistance is the smooth surface. If it were possible to maintain this smoothness in a package without any folds or creases, the cellulose derivatives would have excellent insect-resistant qualities. Several regenerated celluloses (cellophanes) have been tested. A series of du Pont #300 Cellophanes (MST 52, MST 56, MST 57, MSAT 84, MSAT 85) were readily penetrated by lesser grain borer adults, cadelle larvae and granary weevil adults. The MST 56 was slightly more resistant than the others. Sylvania #300 triplex was penetrated by broadhorn flour beetles, granary weevils, Mediterranean flour moths and the cadelles. Heavier cellophanes (du Pont #600 and Sylvania #600) were more resistant than #300 weight but were penetrated by

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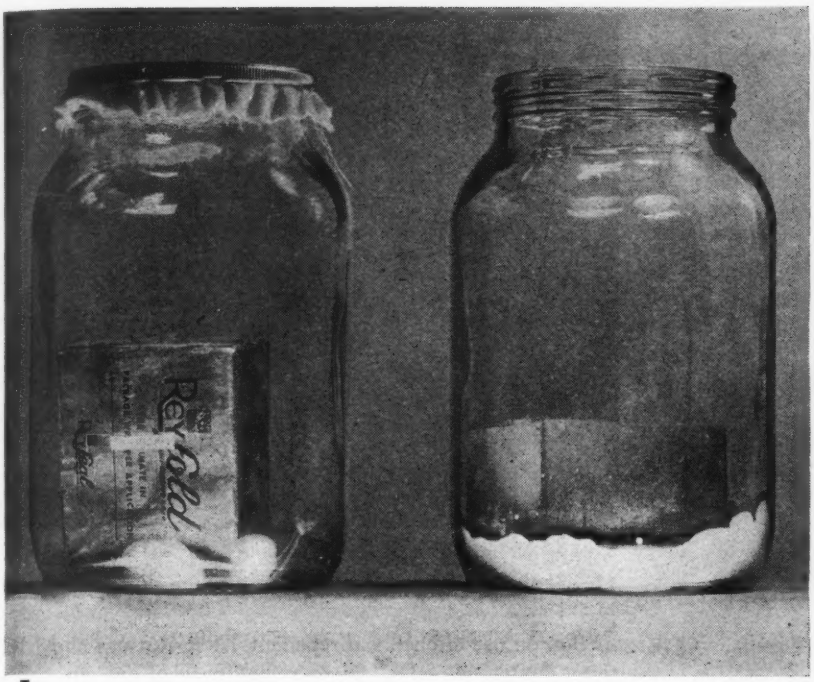
6—*Battery of garbage cans used for testing K ration and larger packages, stored in dark room at 80 deg. F. Humidities may be varied within cans according to the test.*



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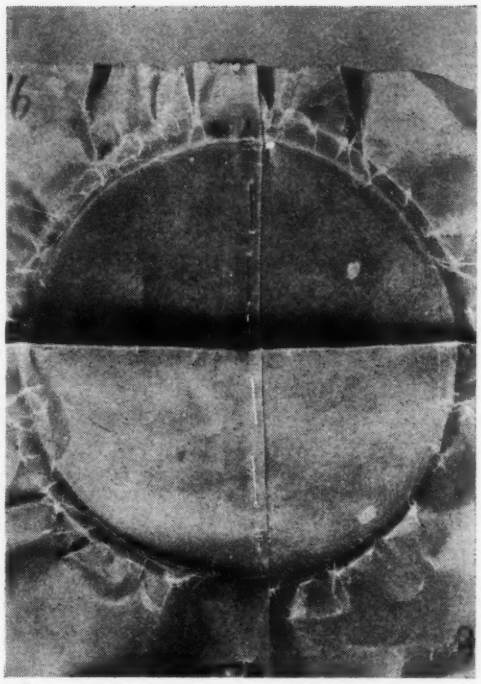

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***7**—Two methods of testing in gallon jars. Package to left is placed directly on bottom of jar and insects introduced around package. Test unit at right is similar except that a layer of plaster of paris provides flat surface on which package rests, allowing insect to get better purchase between floor and package.* ***8**—Divided arena method for comparing chemically impregnated wax papers. Paper to left has repellent chemical incorporated in wax, is stapled to untreated waxed paper (right). It may be seen that untreated waxed paper has been scarified and penetrated by cadelle larvae; chemically treated paper shows no damage.*

cadelle larvae and granary weevil adults. *Cellulose acetate* plasticized with diethyl phthalate is about equal to the poorer cellophanes in resistance while *cellulose acetate butyrate* plasticized with dioctyl phthalate compares favorably with du Pont Cellophane #300 MST 56. *Ethyl cellulose* has not been tested. In general, these cellulose derivatives are quite resistant when not folded, but in the presence of folds their resistance largely disappears.

Among the *rubber base products* the only material tested has been *rubber hydrochloride film* (#120 N2 Pliofilm). In our tests cadelle larvae penetrated very readily and cadelle adults, granary weevil adults and Mediterranean flour moth larvae somewhat more slowly. This material should not be considered resistant to insect penetration.

Most *papers* are easily penetrated by insects. Termites, silverfish, psocids and cockroaches frequently feed on paper and many others can penetrate it. *Kraft paper* (#50 dense wrapping) has been used as a standard of comparison in many of our tests. It is not resistant to penetrations by insects, being easily penetrated by cadelle larvae, lesser grain borer adults, granary weevil adults. It is more resistant than cellophane when folds are present. One hundred per cent *rope paper* with a very hard smooth finish is much more resistant than ordinary kraft. *Super-calendered, unbleached sulfite, laminated amber diaphane, double-waxed parchment* and similar thin materials show little resistance to insects.

Sandpaper and various other abrasive papers show remarkabe resistance to insect attack. When the sanded side of 3/0 sandpaper is exposed to cadelle larvae or lesser grain borer adults, it is very resistant. The unsanded side is less resistant. Armour's No. 320 A Crystalon Abrasive paper was penetrated only after nine months' exposure.

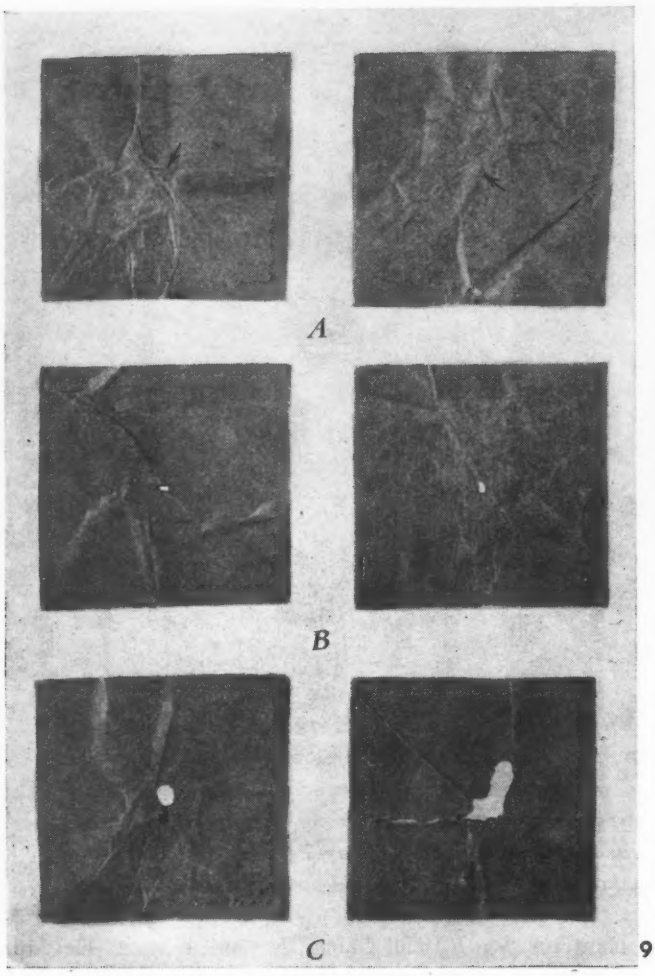
Several *impregnated papers* have been tested. *Brownskin*, a rough paper impregnated with Socony asphalt (melting point 108 deg. F.) and Cumar, is more resistant than kraft paper. It was penetrated in about one month by cadelle larvae. *"Celcure treated" papers* of various types were not resistant to penetration.

Several *laminated wrappings* have been tested either as sheets or bags. A heavy laminated paper containing stout strings spaced about $^3/_4$ in. apart and asphalt in the middle layer showed considerable resistance. Bemis multi-wall bags with a laminated asphalt paper in the outer layer were relatively easily penetrated by cadelle larvae, but were fairly resistant to other insects. Reynolds Metals (kraft-asphalt-leadfoil) wrappings were easily penetrated by cadelle and Dermestes larvae. In tests with groups of miscellaneous insects, Reynolds Metal afforded little protection. Thermophane A, a heat-sealing moistureproof cellophane laminated to sulphite paper, and Thermophane B, a moistureproof cellophane laminated to vegetable parchment, showed slight resistance to insects. They were perhaps better than kraft paper or straight cellophane but were readily penetrated by cadelle larvae.

Metal foils—When used as protective wrappings, metal foils will seldom be insectproof. All metals tested were penetrated by cadelle larvae. For a discussion of the relative resistance of various metals, see above under metals.

Numerous *waxed papers* have been tested for resistance to insects and all were readily penetrated. *Double-waxed wrapped* K Rations were more readily penetrated than waxed-dipped cartons. Waxing increases the resistance of wrappings but none of the waxed papers tested to date have proved resistant.

Protective coatings—Coatings to protect packages from insect attack have particular promise because of the possibility of incorporating repellent or toxic materials. The only protective coatings tested thus far have been various waxes (see



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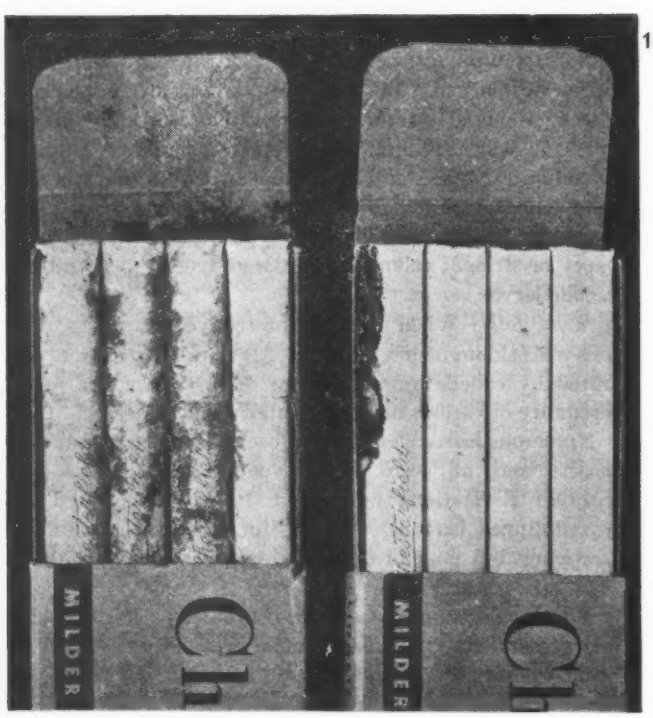
9—Types of penetration of metal foil by miscellaneous groups of insects. A, very tiny penetrations (arrows); B, larger penetrations and C, extremely large penetrations. Note that most penetrations are made at points where material has been folded or roughened. **10**—*Cigarette destruction in penetrated K-ration pack due to infestation of insects and mold. Note prepupa of cadelles.*



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11—*Showing pupa and its cell in a piece of chewing gum.*

section on use of chemical repellents). K Rations and J Rations double-dipped in microcrystalline wax are among the most resistant packages tested to date. The so-called "thermoplastic pack" is very resistant and has been penetrated by the cadelle only after long exposure. This package could be improved by closer attention to the cutting and assembling of the carton to provide tighter fitting seams, and more careful dipping to provide a smoother, more uniform, bubble-free coverage of wax. The type of wax, of course, influences the smoothness of the coating.

Incorporation of chemicals for increase of resistance to insect penetration

In view of the difficulty involved in the production of a practical insectproof package by purely mechanical means, the incorporation of toxic or repellent chemicals in the paper, fibreboard, or wax covering of packages offers one of the most promising approaches to the problem. With this in mind, numerous tests have been conducted, with due consideration to possible hazards to human health resulting from handling of packages and possible contamination of foodstuffs.

Tests of 50-lb. kraft paper treated with solutions of various chemicals at 2% concentration in molten microcrystalline wax have been made by the arena method described in earlier reports.[1] Many compounds are of no value in preventing penetration of cadelle larvae; e.g., sodium chloro-*o*-phenate, sodium pentachloro phenate, sucrose octo acetate, copper stearate, copper oleate, copper resinate, naphthyl amine trichloroacetate, OC naphthol, B naphthol, phenothioxin, dichloro ethyl phthalate and numerous others in addition to the list already reported in the references cited above.

Among nitro compounds, 2,4-dinitro anisole, 2,4-dinitro phenetole, dinitro aniline and *o*-nitro diphenyl were relatively ineffective. Continuation of work with the dinitro compounds has demonstrated the value of four compounds; at 2%, 3,5-dinitro-*o*-cresol allowed penetration after 73 days, 3,5-dinitro-*o*-cresyl acetate after 60 days, 3,5-dinitro-*o*-cresyl trichloroacetate after 74 days and 2,4-dinitro-6-sec-butyl phenol after 86. Papers treated with each of these compounds were still markedly toxic at the time of penetration. The dinitro compounds have the disadvantage that they are all colored but those mentioned above are only light yellow. If exposed to even weak alkali the color becomes much deeper.

[1] MODERN PACKAGING, *17*, 109–113, July 1944.

DDT and certain related compounds have been tested in the same manner with the result that DDT at 2% gave varying results, preventing penetration for a period of 7 to 64 days but remaining highly toxic throughout the longest exposure. Diphenyl trichloroethane gave very little protection from penetration and dichloro diphenyl dichloroethylene (the dehydrochloro derivative of DDT) is completely ineffective. Combinations of DDT and various dinitro compounds gave results typical of the latter materials with no indication of a synergistic action.

Since practical use of chemicals in wax coatings on food packages would necessitate that the molten wax solution be kept at about 190 deg. F. for several hours, tests were made to determine the loss in activity of 3,5-dinitro-*o*-cresol and of DDT when held in molten wax at 190 deg. F. for several hours. The results showed that the 3,5-dinitro-*o*-cresol was unaffected in 12 hours but the DDT was seriously reduced in effectiveness in 6 hours and mostly destroyed in 12 hours.

In order to test wax coatings containing chemicals in a manner approximating actual exposure during transit or storage, small treated boxes have been exposed to insects in large jars. Two cardboard boxes such as are in use for dried eggs were dipped in each of the molten wax solutions and placed in gallon jars. A little flour was placed on the bottom and 10 large cadelle larvae added. Each week thereafter the boxes were examined for entrance holes and six more larvae were added. The tests are still in progress but to date 5% DDT has allowed no penetration in nine months, 2% 2,4-dinitro-6-sec-butyl phenol none in seven months, and 2% 3,5-dinitro-*o*-cresyl acetate none in seven months. All the chemicals apparently have retained their toxicity, for mortality of the larvae still is high. In check runs with no chemicals added, penetration occurred in about one month and there was very low mortality. Type K ration boxes dipped in wax by the packer were penetrated in five months. This test is not as severe as that in the arenas, since food is always present and the larvae do not need to come in contact with the treated surfaces at all. However, conditions are somewhat similar to those an insect would encounter if it entered a large box containing smaller containers some of which had been broken in handling.

The conclusions drawn from work to date may be summarized as follows:

1. Several dinitro phenol derivatives can be incorporated in wax coatings to prevent insects from entering boxes treated with the molten mixture. The compounds so far obtained suffer from the disadvantage of yellow or orange color, particularly in the presence of even weak alkali. From theoretical considerations, much more desirable compounds of this family can be formulated but to date it has not been possible to obtain them and the assistance of a competent organic chemist is needed to synthesize them.

2. DDT and a few related compounds so far tested are effective unless subjected to elevated temperature for some hours. Certain dinitro compounds are stable under the same conditions.

3. Certain members of at least two families of chemicals when incorporated at low concentrations in wax greatly increase the time required for insects to penetrate packages dipped in the molten wax solutions.

Qualities of an insectproof package

Results in our laboratory have clearly indicated that certain specific qualities of packaging materials are of particular importance in insect resistance.

The surface hardness of a (*Continued on page 182*)

Veneer-kraft boxes to save V-board

Veneer-kraft boxes for the oversea shipment of shoes, clothing and other Army supplies, which will save up to 68% of critical kraft material over the amount now used in V-boxes, have been developed by the Quartermaster Corps and are being recommended to contractors.

In addition to the saving in kraft, the veneer-kraft boxes are said to have greater strength for the rigors of overseas shipment, plus other advantages. Two types of the boxes are in procurement, differing only in the thickness of the plywood inner member of the lamination.

Panels of single ply, $^1/_{16}$-in. hardwood form the inside member of the lighter type box, constructed for a content weight up to 75 lbs. For carrying materials weighing from 76 to 225 lbs., two single plies are laminated together to form the inner member.

The wood member, in both cases, is faced on both sides with 42-lb. kraft board approximately 0.16 in. thick—dense, heavily sized, highly water-resistant and glued to the wood core with a water-resistant glue.

In constructing the box from these panels of veneer-kraft, they are reinforced on the edges with wooden cleats $^5/_8$ in. thick by $1^3/_4$ in. wide for loads up to 75 lbs. and $^3/_4$ by $1^3/_4$ in. for heavier size (up to 225 lbs.).

One of the primary advantages that the Quartermaster Corps has found in tests of the kraft-veneer box over the V-board box is that the former does not require the inclusion of a double-wall corrugated fibreboard liner and its rigidity permits it to be stacked, even when wet, while V-board boxes would collapse under the same conditions.

Tests have shown that the kraft-veneer box will stand a top-to-bottom compression of 7,850 lbs. without failure after 24 hrs. in the water, compared to 65 lbs. in the same test for the V-board box.

The V-board box usually is destroyed upon opening, but veneer boxes, if the nails are withdrawn from the top panel, may be re-used. They are particularly adapted for shipment to the Pacific because of their resistance to high humidity—a quality imparted by their external treatment with a water-repellent solution of 30% by weight of urea formaldehyde, "or other preservative of equivalent effectiveness as a protection against mold or other micro-organisms."

Among the other economic advantages in the use of the new boxes are these:

Only 250,000 boxes, 20 by 16 by 12 in., with a carrying capacity of 70 lbs. each, may be made from 555 tons of V-2 board, but 555 tons of paperboard will make approximately 12,960,000 sq. ft. of single-ply veneer-kraft board which, when made into boxes, will provide about 1,135,000 boxes of the same size. This number of boxes also requires 1,700,000 bd. ft. of lumber. This footage of lumber, used in wire-bound boxes (not kraft veneer) of $^3/_{16}$-in. hardwood, will make 583,000 boxes. When used separately, the paperboard and wood make a total of 833,000 boxes. Used in combination, they make 1,135,000 boxes, a gain of 302,000 boxes or 83 carloads.

Ethyl-cellulose sheeting . . . its properties and fabrication

by F. C. Dulmage, Jr.,[1] and F. J. MacRae[2]

This is another article in line with the policy of MODERN PACKAGING to keep its readers informed about new developments and improvements in packaging materials. The wide-spread acceptance of ethyl-cellulose sheeting for drawing has led to considerable development and research in this field. Here is a report of the work done to date with a hint of new types of ethyl-cellulose sheetings to come.

Cellulose derivatives are perhaps the oldest of the plastic families and the packaging industry has long been dependent upon cellulose in one form or another as a source of material. Schaunbien[3] in Basle, Switzerland, discovered the first cellulose ester, nitro-cellulose, in 1846. He made no use of his discovery other than to send samples to friends and write some notes. However, these were published and were to form the foundation of later work. John Wesley Hyatt, famed for his development of the roller bearing, is given chief credit for the production of the first commercial plastic, cellulose nitrate, in 1868. This material was marketed under the name "Celluloid."

Ethyl-cellulose is chemically classed as an ether. It is made by treating a high alpha cellulose, such as wood pulp or cotton linters, with caustic soda to form an alkali cellulose. This, in turn, is reacted with an ethylating agent such as ethyl chloride, resulting in the introduction of the ethyl groups into the cellulose molecule.

Ethyl-cellulose was the first of The Dow Chemical Co.'s plastic materials to be produced commercially. It was introduced to the trade in bulk form and as a continuous sheeting known as "Ethofoil." Later this trade name was changed to "Ethocel Sheeting."[4] This clear, transparent, thermoplastic sheeting possessed unusual toughness, flexibility and ductility.

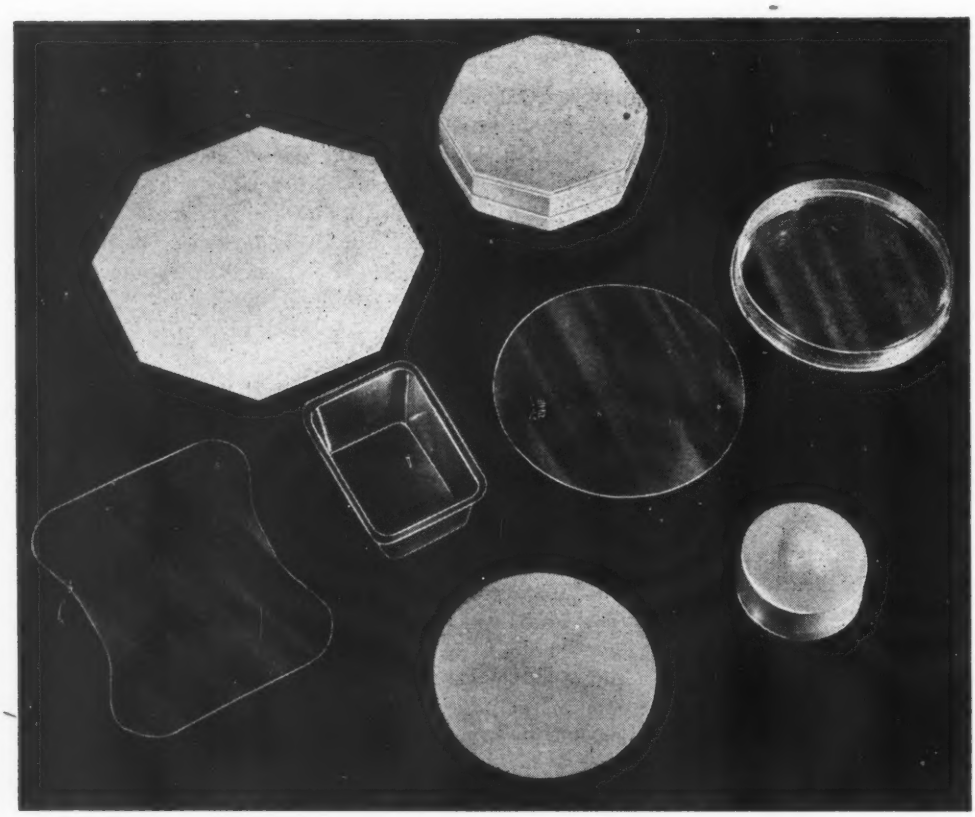
[1] Cellulose Products Division, The Dow Chemical Co., Midland, Mich.
[2] Plastics Development Division, The Dow Chemical Co., Midland, Mich.
[3] "Handbook of Plastics," Simond & Ellis.
[4] Further references to "ethyl-cellulose" in this article should be taken as applying to the Dow product "Ethocel Sheeting," and not necessarily to all ethyl-cellulose sheeting.

These properties created widespread interest and resulted in immediate acceptance of ethyl-cellulose sheeting for the fabrication of rigid transparent containers and sales displays. Further development work led to the utilization of these properties so unusual among cellulose derivatives and resulted in the adoption of mass production methods in the fabrication of ethyl-cellulose sheeting into packages.

At the present time ethyl-cellulose sheeting is produced as clear, transparent sheeting as well as in transparent or opaque colors in thicknesses ranging from 0.001 in. to 0.060 in.

Properties

Of the aforementioned properties of ethyl-cellulose, perhaps the most outstanding are ductility and its ability to withstand folding without fracturing. This latter character-



The illustration shows four different drawn parts and their original blank shapes.

istic is maintained over an exceptionally wide thermal range. (See Figs. 2 and 3.) In addition, ethyl-cellulose films have good dimensional stability and low moisture absorption. They also possess excellent resistance to heat, cold, light and the action of water at ordinary temperatures.

The inherent properties and macromolecular structure of ethyl-cellulose make it unnecessary to use large amounts of plasticizers or other molecular softening agents. Thus, an unplasticized sheeting is obtained that is dimensionally stable under variable conditions of temperature and humidity. The physical properties of ethyl-cellulose sheeting are listed in Table I.

Clear, transparent ethyl-cellulose sheeting (Ethocel #610 and #614), when tested in a Fadeometer, is not discolored or embrittled after 300 hours' exposure. Both transmit up to 92% of the visible light through thicknesses as great as 0.020 in. As shown in Fig. 4, the #610 sheeting transmits all the ultra-violet rays which will normally penetrate the earth's atmosphere.

The #614 type sheeting has ultra-violet cut-off at 370 millimicrons and is recommended for applications wherein good outdoor weathering is desired. Both formulations transmit infra-red rays over the entire range of radiation, except for a narrow absorption band at wave lengths about 1,000 millimicrons.

The flammability of ethyl-cellulose is low. When exposed to heat from an open flame it will first soften, then melt. On continued application of the flame it will ignite and burn slowly. Tests have shown it to present a fire hazard comparable to stacked newsprint. It is rated by the Underwriters' Laboratories as a slow-burning material.

Ethyl-cellulose sheeting is odorless, tasteless, non-toxic and is not affected by most edible fats and oils.

Fabrication

As a result of its ductility, ethyl-cellulose sheeting has been recognized as the outstanding drawing-type cellulose derivative for several years. Fig. 3 shows the load elongation curves of unmodified ethyl-cellulose sheeting and three other unmodified cellulose type materials. This readily illustrates the basic qualities which are inherent in ethyl-cellulose and thus makes practical the fabrication of articles from sheeting by the drawing process without loss of properties.

The term "drawing" as it is used here does not apply to the "blowing" type of forming. In this method of fabrication there is very little stretching or thinning of the original material. Actually it is a redistribution of the sheeting from a flat blank to some other shape. Fig. 1 illustrates drawn pieces and their original blank shapes.

In the past, most thermal drawing was usually performed by slow, cumbersome methods. Early presses were hand operated, hand fed and sometimes hand actuated. Converted arbor or drill presses and similar types of equipment were also used. Equipment of this type is still employed where limited quantities are desired.

It was soon found that the smooth action of a hydraulic press was ideal for extreme draws and equipment of this type became popular. Many of these hydraulic presses of the early experimental era are still in operation and are doing excellent work.

The actual drawing process can be separated into three mechanical operations: i.e., the clamping, drawing and ejection steps.

For clamping the blank during the drawing operation, several types of clamps have been used. These include hydrau-

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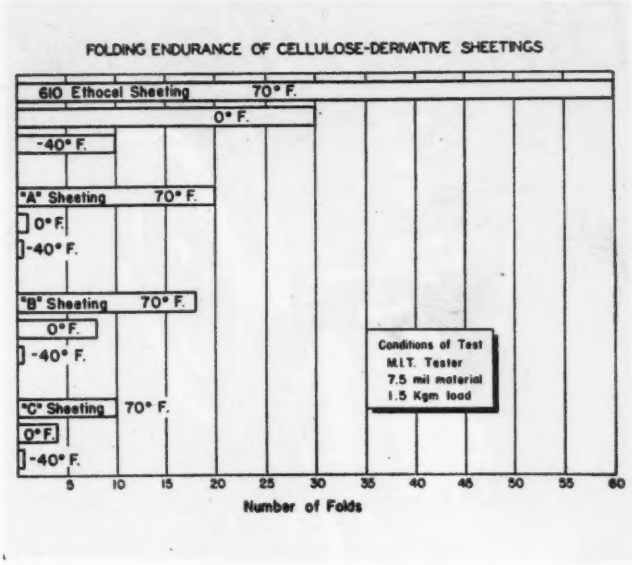

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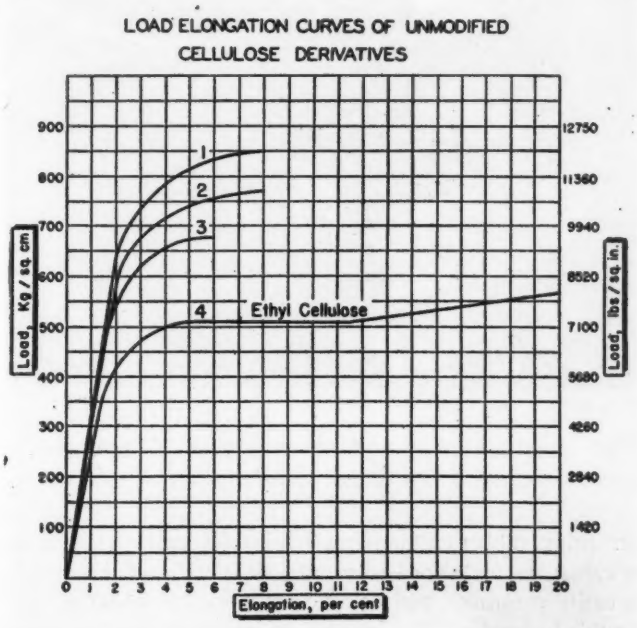
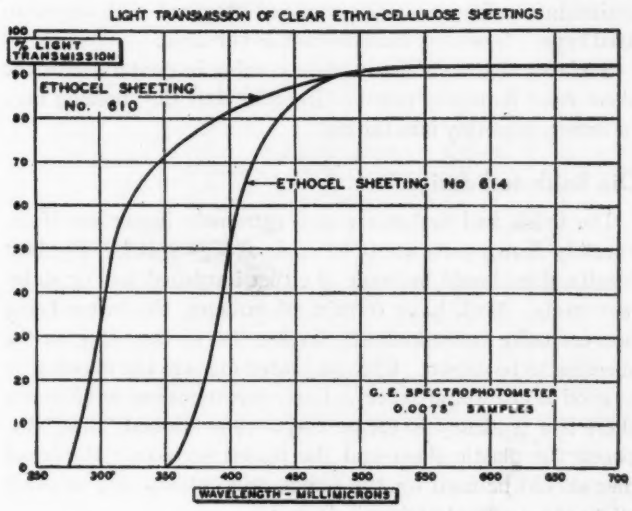
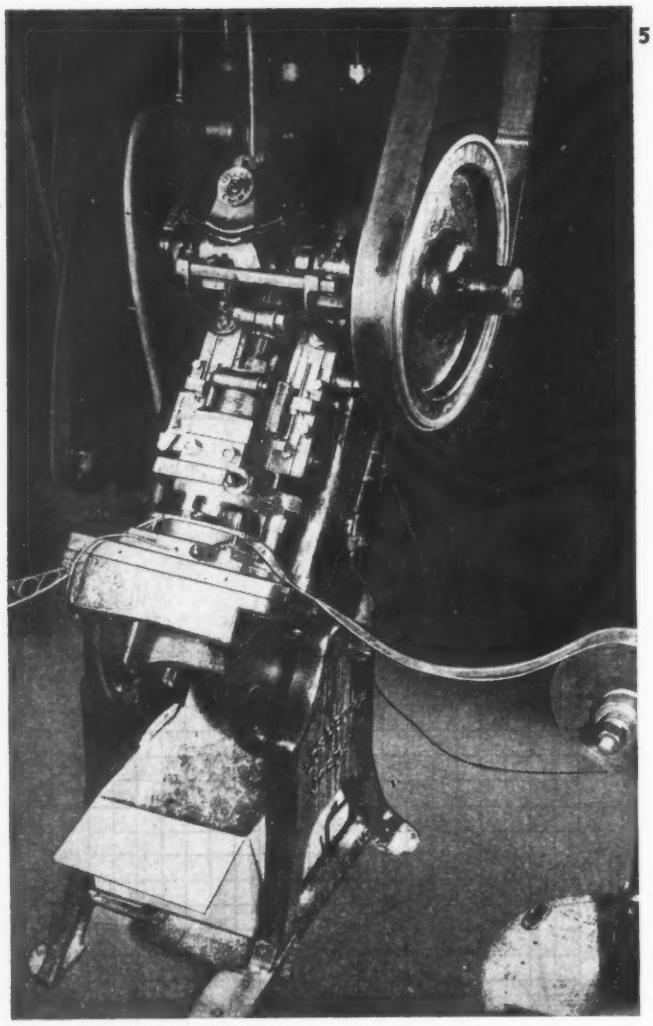

LOAD ELONGATION CURVES OF UNMODIFIED CELLULOSE DERIVATIVES
Load, Kg/sq cm
900 800 700 600 500 400 300 200 100
Load, lbs/sq in.
12750 11360 9940 8520 7100 5680 4260 2840 1420
1
2
3
4
Ethyl Cellulose
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Elongation, per cent

4


LIGHT TRANSMISSION OF CLEAR ETHYL-CELLULOSE SHEETINGS
% LIGHT TRANSMISSION
100 90 80 70 60 50 40 30 20 10 0
ETHOCEL SHEETING No. 610
ETHOCEL SHEETING No 614
G. E. SPECTROPHOTOMETER
0.0075" SAMPLES
250 300 350 400 450 500 550 600 650 700
WAVELENGTH - MILLIMICRONS



PHOTO, COURTESY MEANS STAMPING CO.

High-speed plastic sheet drawing unit; a standard single-action crank type, gap frame, metal press with 4-in. stroke.

lic, spring, rubber cushions, mechanical (eccentric levers and/or cams) and air. For best results, air is preferred, because it is easily controlled and being a compressible media is very flexible to handle. The latter is an important feature and is one of the reasons why many presses employing hydraulic or toggle-type clamps fail consistently to produce accurately drawn parts. Spring operated clamps may be designed to maintain conditions similar to those obtained with air-actuated types; however, these are not as versatile.

Surfaces of the clamping plate coming in contact with the sheet must be highly polished in order that the sheeting may be drawn smoothly into the die.

Die finish and design

Die finish and design are also extremely important if accurately drawn parts are to be made at high speeds. For best results, dies should be made of either hardened tool or stainless steels. Both have certain advantages, the latter being non-corrosive and apparently having less surface drag on the sheeting to be drawn. Chrome-plated dies are not necessarily as good as one would expect. Early investigations have shown there is a tendency to create the aforementioned "drag" between the plastic sheet and the plated surfaces. Hardened dies should be used for the punch and cutting ring or other parts where a hard surface is desired.

Since heat increases the workability of the ethyl-cellulose,

TABLE I—PROPERTIES OF ETHYL-CELLULOSE SHEETING*

(All data referred to 0.002-in. films at 70° F. and 50% R. H. for properties which are affected by thickness)

	Formulation	
	610D 610N 610	*614*
General		
Specific Gravity	1.15	1.1508
Specific Volume, cu. in./lb.	24.1	24
Square in./lb. (approx.)	12,000	11,950
Normal Moisture Content	1.5%	1.5%
Moisture Permeability gm./100 sq. in./24 hrs. at 100° F.	45	45
Water Absorption—24 hrs. at 25° C.	2.6%	2.4%
Thermal		
Heat Forming Temperatures	180–275° F.	170–260° F.
Scoring and Folding	170–200° F.	160–190° F.
Continuous Beading	220–265° F.	210–265° F.
Deep Drawing	210–275° F.	200–265° F.
Softening Point	310° F.	300° F.
Melting Point	375° F.	360° F.
Burning Rate (A.S.T.M.)	Slow	Slow
Specific Heat, B.t.u./lb.	0.348	.....
Linear Coefficient of Expansion Per ° C. from −10° C. to +50° C.	0.01%	0.01%
Inches/in./° F. from 15° F. to 110° F.	0.00006	0.00006
Mechanical		
Tensile Strength, lbs./sq. in.	8,000–10,000	8,000–9,500
Elongation	25–30%	25–30%
Folding Endurance 1 kgm. load, M.I.T. Test	2,750	2,750
Optical		
Refractive Index	1.47	1.47
Transmission of White Light	Up to 92%	Up to 90%
Ultra-Violet Cutoff	2,200 Å	3,700 Å
Transmission of Infra-Red (Except for a narrow absorption band at 10^{-3} cm.)	90%	90%
Fadeometer 300 Hrs.		
Yellowing	None	None
Embrittlement	None	None
Electrical		
Dielectric Constant		
60 cycles	3.2	3.2
1,000 cycles	3.1	3.1
1,000,000 cycles	3.0	3.0
Power Factor		
60 cycles	0.012	0.012
1,000 cycles	0.004	0.004
1,000,000 cycles	0.02	0.02
Dielectric Strength—volts/mil (A.S.T.M. short time test 2,500 volts/sec.)	4,500	4,500
Volume Resistivity, ohm cm.	10^{15}	10^{15}

* Dow "Ethocel."

it is advisable to apply heat to either or both the upper and lower dies.

Steam or electricity have been used successfully; however, electricity is preferred due to its general availability and ease of handling. In either case the heat must be carefully controlled over the entire drawing surfaces. Circular type electric heating elements and cartridge style thermostats have proved satisfactory for this use.

Investigations have shown it is not necessary to preheat ethyl-cellulose sheeting in the lighter gauges prior to the drawing operation. However, when heavier gauges are drawn, especially at high speeds, it is advisable to use a preheater located between the feed roll and die. Infra-red lamps have been found adequate for this purpose.

The drawing operation

Figs. 5 and 6 are illustrations of a high speed plastic sheet drawing unit. The press shown in Fig. 5 is a standard single-action crank type, gap frame, metal press having a 4-in. stroke. A unit of this type allows for blank, strip or roll feed of the sheeting to be drawn. The latter results in faster production speeds and consequently reduces the ultimate drawing costs.

The section of the die shown in Fig. 7 is representative of the type used in the press shown in Fig. 5. The stock to be drawn enters the die from the right-hand side at point *A*. It is then punched and drawn by the upper die *B* on the downward stroke of the press. On the return stroke the drawn piece is stripped from the ram *C* by air entering through *D* and/or the lower drawing ring part *E* into *F* of the upper die *B*. On reaching the end of the upper stroke the drawn piece is ejected by the knockout pin *G* and is then directed by an air blast from jet *H* into the conveyor chute. (See Fig. 6.)

This unit was designed for an application requiring several hundred thousand units $1^1/_3$ in. in diameter by $^1/_2$ in. deep. The item had to be drawn to very close limits and $7^1/_2$-gauge ethyl-cellulose sheeting was used. Pieces were drawn at the rate of 75 per min., being blanked, drawn and ejected in a single operation. If this application had used a heavier gauge material the production rate could have been increased considerably.

Drawing studies have shown parts may be made at rates up to 120 per min. under practical conditions. However, this is not necessarily the highest rate that may be reached. Refinements in equipment should result in continuously increasing production speeds.

New developments

The widespread acceptance of ethyl-cellulose sheeting for drawing has led to considerable development and research work in this field. This has resulted in several new and interesting materials which may be fabricated by the drawing process.

A special type Ethocel Sheeting[5] makes it unnecessary to use additional lubricants for drawing. This results in superior drawing properties as the sheeting has a uniform slip in the die and eliminates messy wax or powder application on the press.

A matte finish sheeting in continuous rolls has been used for drawing. This material may be drawn without destroying the matted surface and should find application in many articles requiring a dull finish.

[5] U. S. Patent No. 2,296,723.

Laminating studies have led to the development of multi-colored sheetings. These may be drawn and should find application for many decorative and useful articles. Thicknesses up to 0.125 in. have been fabricated by the drawing method.

Further studies are being directed along the lines of obtaining a sheeting having good moisture-vaporproofness and at the same time being capable of being fabricated by the drawing process.

The adaptation of the inherent toughness, flexibility and ductility of ethyl-cellulose to sheetings for transparent packaging was fairly well established prior to the war. Military needs presented a host of unusual applications and the desirable properties of ethyl-cellulose sheeting resulted in its wide use in many new fields. Because of its wide acceptance for both civilian and military needs, ethyl-cellulose sheeting is practically assured an outstanding position in the postwar packaging field.

This is a close-up of the drawing mechanism showing the drawn part about to be ejected from the upper die.

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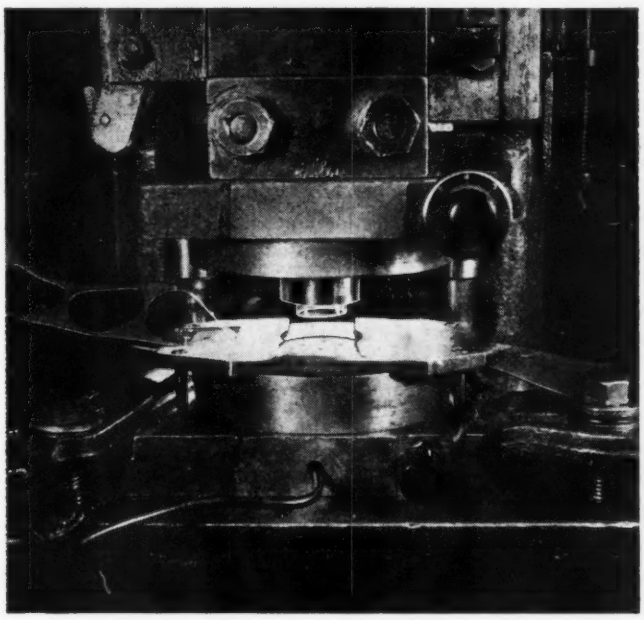
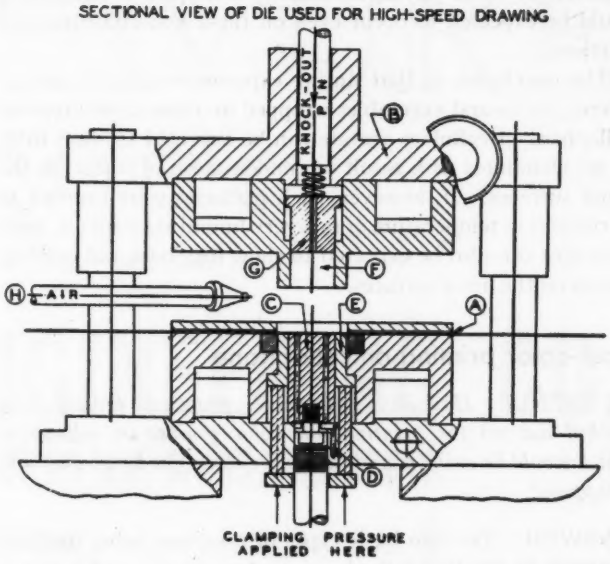
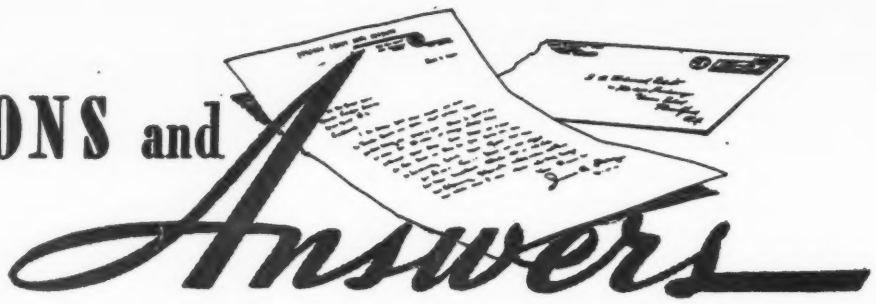


7 SECTIONAL VIEW OF DIE USED FOR HIGH-SPEED DRAWING



QUESTIONS and Answers



This consultation service on packaging subjects is at your command. Simply address your questions to Technical Editor, Modern Packaging, 122 East 42nd St., New York 17, N. Y. Your name or other identification will not appear with any published answer.

Moisture-vapor transmission in fruit wraps

QUESTION: For the wrapping of fruits and vegetables is there any advantage in using cellulose acetate film in preference to cellophane? Because of the higher moisture-vapor transmission rate of cellulose acetate film we have heard that the acetate helps to prevent unsightly condensation of moisture on the inside of the package. Is this scientifically sound?

ANSWER: Cellulose acetate film does have a very high permeability to water vapor. However, its permeability is not too different from unlacquered cellophane, values for both being so high that they can be considered as having no effective resistance to the migration of water vapor.

Conversely, cellophane coated with moistureproof lacquer—so-called moistureproof cellophanes—have a low level of water-vapor permeability and if used as a wrapper on a product containing a great deal of moisture, such as fruits and vegetables, can be expected to retain much of this moisture within the package.

As soon as the package atmosphere becomes saturated or if the temperature of the surrounding air is lowered, the air becomes cloudy because of a film of condensed water vapor on the inner surface. This condensed film of water can cause deterioration and mold growth of the contents by dripping back on the product.

Under the same circumstances, plain cellophane (unlacquered) or cellulose acetate would transmit a large quantity of this water vapor, but if the temperatures surrounding the package were suddenly reduced or if the package were surrounded by other packages similarly wrapped, condensation could be expected to occur even on these non-moistureproof barriers.

The conclusion is that during exposure to normal atmospheres, fruits and vegetables wrapped in a non-moistureproof cellophane or cellulose acetate can be expected to show little or no cloudiness as a result of condensation of water on the inner surfaces. If, however, such packages were exposed to variations in temperature or in a very humid atmosphere, such packages can also be expected to show fogginess and condensation on the inner surfaces.

Four-color printing on cellophane

QUESTION: Has any economical, practical process been worked out yet for printing four-color process on cellophane which would be suitable and in a price range for bread and cake wrappers?

ANSWER: The two basic types of processes being used extensively in printing cellophane are typography and gravure. Because of the character of the cellophane there are many problems with both types when used to produce four-color process printing. In typographic printing—letterpress and aniline—there are limitations in plate construction and printing inks. Letterpress and aniline plates which print from a relief surface cannot provide a fine enough design pattern to permit process work of any caliber. Numerous attempts have been made to produce process work from these types of plates but results have been unsuccessful on cellophane. In letterpress it is impossible to superimpose colors to produce tone values which can be produced satisfactorily on paper by other methods. Likewise, in aniline printing the rubber plate cannot accept a design pattern that will permit color gradations.

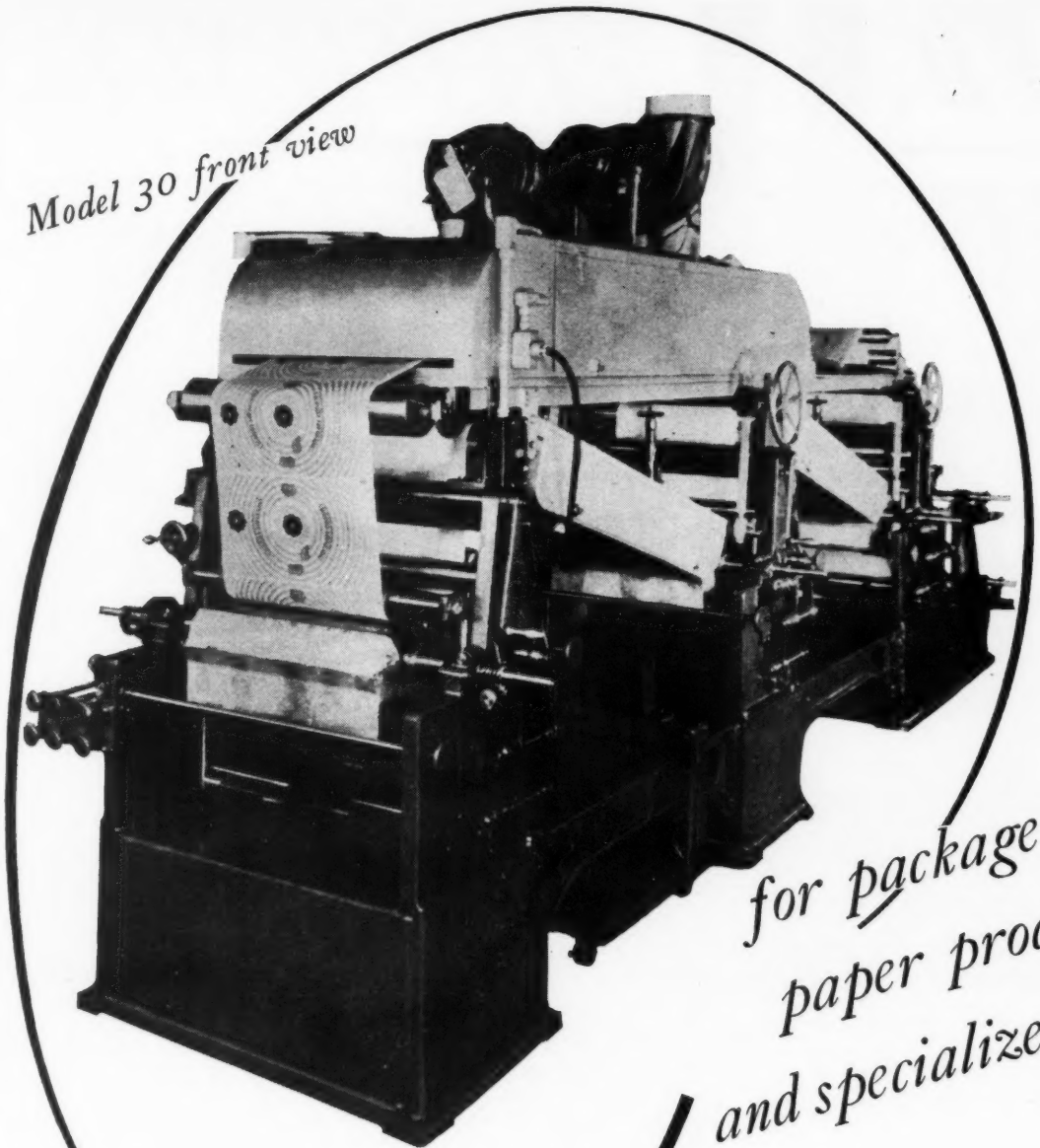
The most successful work has been done in this connection using the gravure process and specially prepared inks.

Experience to date shows that four-gravure process rolls require considerable amount of time in tooling and in preparation for the final printing process with a complementary delay and cost in modifying the inks to do the quality job which is the desired goal. Even though we may have a perfect set of plates to start with and printing inks to give satisfactory tone values per single color, we find that in going to the press the super-imposition of this tone brings about certain patterns and disturbances when overprinting these colors on a non-absorbent surface. The quality of the job suffers considerably and other difficulties are magnified appreciably. Some cellophanes are moistureproof, that is, they possess surface coatings which inhibit ink flow-out, and thereby accentuate the problems. It is quite possible, however, that in the post-war period a satisfactory economical job can be done when the engraving roll methods are improved and printing inks are developed that can be superimposed without any disturbance taking place between colors.

Also, the final cost of a multi-color printing job on cellophane can only be determined by knowing the particular kind of cellophane required for the preservation of the produce (whether PT or one of the moistureproof grades), the registration and coverage of the printed design, the fill of the web on the press, the form in which the material is to be delivered (in sheets or rolls) and the quantity to be purchased at any given time.

The effect of any of these factors is so great that it is not possible to estimate the cost of printed cellophane wrapper without having a specific problem to work on.

Multi-color printed cellophane is being used to some degree in the bakery field for cakes and bread and the amount and cost of this material which will be used in the future will depend upon having the detailed requirement and specifications for the variables mentioned.



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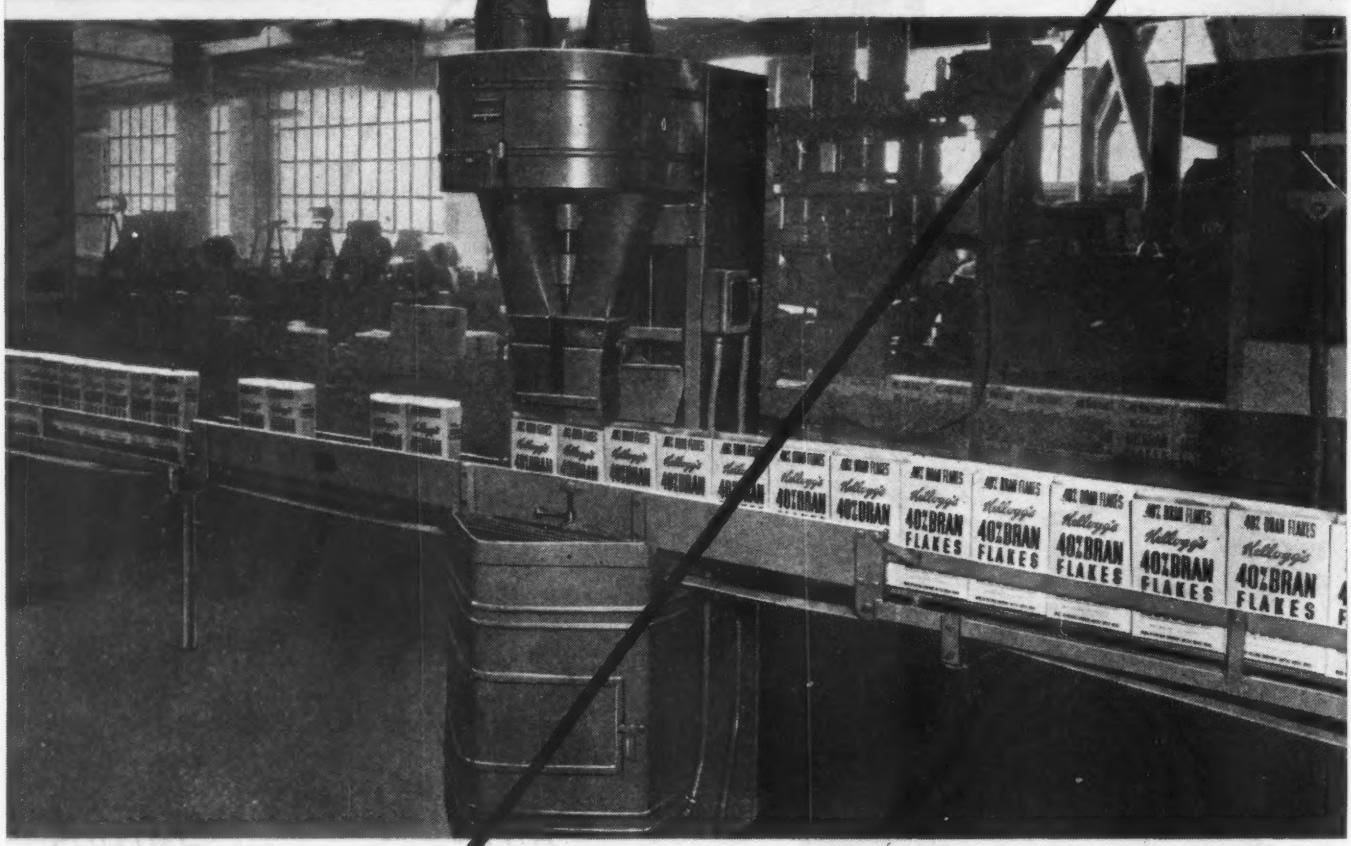

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VICE VERSA

You saw these two advertisements, each occupying a full page in the May issue of MODERN PACKAGING Magazine. You may have noticed that something was wrong with the picture. The advertisement for Aluminum *Tubes* had the signature of Aluminum *Foil* and vice versa.

We reprint them without their original blue backgrounds, but with the correct logotypes in the proper positions to show you how they should have appeared.

We are, of course, terribly sorry that such a silly error should have occurred. It is one of those things that can happen to anyone but it has never before happened to us. If it is human to err and divine to forgive, we hope that our readers will display the same indulgence which the Aluminum Company of America and their appointed advertising agency, Fuller & Smith & Ross, have shown to Modern Packaging. We will try not to be too human in the future.

MODERN PACKAGING
Advertising Department

WASHINGTON REVIEW

R. L. Van Boskirk, Washington Editor

● **No Overall Relaxation Yet**—While there have been some significant relaxations of Government controls affecting isolated groups within the packaging industry, the immediate overall picture of packaging materials remains one of scarcity and will probably remain so for months.

Particularly is this true in the pulp, paperboard, containerboard and fibreboard fields with the tendency here being toward stricter control rather than any shade of less stringent supervision—not because the Government wants to keep the industries which supply these items under its thumb, but largely because there is only so much raw material to go around and the war comes first.

An example of the "tighten up the belt" thinking that governs those industry men who are aiding the Government in its big job of supplying adequate critical materials for the war effort, is found in the ruling that packers who re-use new "service cartons" in which empty glass jars, cans or other smaller enclosures are shipped to them, will have those cartons charged against their own quota.

And the Government is not only asking others to tighten their belts—it is also conserving wherever possible to do the job which must be done—winning the war.

For instance, when the Army, Navy and other Government agencies found that a V-2 box would do practically as well for shipment of rations, clothing and other supplies going overseas as the strongest type, V-1, they reported the finding, with the result that manufacture of the V-1 has now been discontinued by an order by WPB. As a result, thousands of tons of containerboard will be saved.

Even with this saving, containerboard requirements for manufacture of "V" boxes during the current quarter are reported to be around 365,000 tons, approximately the level for requirements during the first half of the year.

Some easing of the tight supply of containerboard is expected as a result of the recent ruling by WPB (Direction 1 to Conservation Order M-93) eliminating all grades except containerboard from the list of paper and paperboard items which must get preference.

● **Pulpwood Production Down**—Reports prepared by the Government on production of pulpwood indicate that 1945 production is running about 5% under that of 1944. Whether the appeal of WPB Chairman Krug for an increase in production will do any good remains to be seen. Krug asked for continuation of sawlog and pulpwood operations through the summer and fall, normally seasonal, because "increased production . . . is absolutely essential to the successful prosecution of the war in the Pacific."

● **Canada Revokes Orders**—Some surprise has been expressed here at the revocation by the Canadian Government, through its Wartime Prices and Trade Board, of many restrictive orders affecting, among other things, packaging materials and items still rigidly controlled here.

● **Urgency List Items**—Manufacturers of fibre containers and drums, steel drums, and pails, are expected to have a little less trouble with manpower ratings and possibly will be able to squeeze out more critically needed production as a result of these items having been placed on the National Production Urgency List, along with wooden boxes and kegs. Primary benefit of such listing is the fact that manufacturers of listed items get higher urgency ratings if they are working on high-rated Government orders.

● **Cosmetic Container Outlook**—Makers and marketers of drugs, pharmaceuticals, cosmetics and kindred products are going to have to get along without any relief, in so far as increased supplies of glass and metal containers for their products are concerned, probably at least until 1946 is well on its way, according to WPB's packaging and container people. Lead for collapsible tubes will remain short also.

● **Aluminum Outlook Improved**—Lest this page look like a purveyor of bad news exclusively, it can be reported that aluminum supplies are becoming easier, and civilian packages using this metal in some form probably will be appearing on shelves soon—if they aren't already. WPB has revoked its Direction 2 to Supplementary Order L-103-b, which prohibited manufacturers from using any aluminum received against their controlled materials plan allotments for making any closures except those for packing certain specified products. Also, aluminum foil probably will be reappearing soon on chewing gum, cigarettes, and other commodities, as a result of WPB's amendment to Direction 24 of CMP Regulation 5. Indicative of the easier situation is the Metal Reserve Company's decision to reduce its proposed purchase from the Aluminum Co. of Canada.

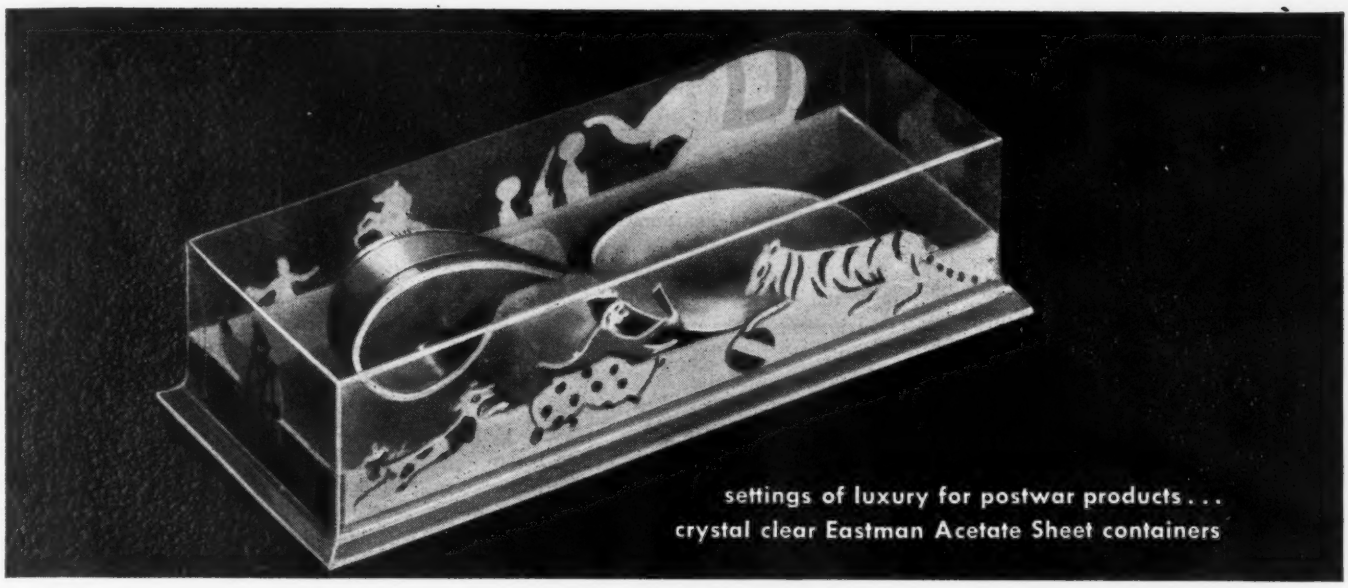
At the same time, the easier supply of aluminum has permitted the Army to go into a new packaging program for "K" rations which uses a laminated aluminum foil wrapper on the "K" carton.

Although the material is available, it is expected that quantity production of collapsible tubes made of aluminum will have to await an increase in production facilities, which are at present limited.

● **Reconversion Chairmen Named**—While the overall packaging and container picture remains not too promising for the immediate future, the Government is still looking ahead to the time when the industry will be able to go back to making peacetime products. Accordingly, the Committee for Period One of WPB has announced the names of six men from the packaging industry who will guide its changeover from military to civilian production. (Period One is the name given to the time between the victory in Europe and the victory over Japan.)

The reconversion officer for the Containers Division of WPB is F. J. Detgen, under the "Period One" plan. Roy F. Segar will be reconversion chairman for containers, consumer type, miscellaneous; for metal beverage crowns, cans, packing, blackplate, tinplate and terneplate and metal closures. Frank J. Hynes is named chairman for fibre drums; metal drums, barrels and pails; fluid milk containers, ice cream and milk cans, kettles, gas cylinders and plugs and flanges for steel containers. Leonard R. Steidel is reconversion chairman for wooden baskets, boxes and crates, drums, cooperage and strapping and seals; Robert A. Morris, for containers division spare parts.

In allied industries which touch on packaging, James Lawson is chairman for reconversion of chemicals, paint and varnish making machinery, drug, cosmetic and pharmaceutical machinery and similar industries and Walter B. Croan is chairman for all industries in the paper division which include paper and paperboard, pulp and paper mill machinery and



settings of luxury for postwar products . . .
crystal clear Eastman Acetate Sheet containers

"born with a silver spoon . . ."

EACH an individual showcase, these are the sparkling containers of Eastman Acetate Sheet . . . protective, transparent . . . in which more and more *postwar* products will be displayed. During the war, our production capacity for Eastman Acetate Sheet is entirely allocated for essential war uses.

Meanwhile—the Kodak Packaging Laboratory is at your disposal for practice in fabricating Eastman Acetate Sheet. You and members of your staff are cordially invited to use this workshop to learn for yourselves, with the assistance of Kodak technicians, how Eastman Acetate Sheet can be adapted to your postwar requirements. For an appointment, write to the Cellulose Products Sales Division, Eastman Kodak Company, Rochester 4, N. Y.

Highly versatile, Eastman Acetate Sheet—a cellulose acetate thermoplastic sheeting—can be drawn, beaded, folded, scored, crimped, stapled, or embossed. Beautiful printed effects are readily obtained. Eastman Acetate Sheet is produced in sheets and rolls; in gauges, .003″ and thicker; in three types: Clear Transparent, Matte Translucent, Colored Translucent.

Cellulose Products Sales Division

Eastman Kodak Company

laminations and coatings. T. E. Hollingsworth is chairman for corrugated and solid fibreboard shipping containers; J. H. Paterson for consumer-type paperboard boxes and Marice E. Cody for repair parts, paper and paperboard division, pulp and paper mill machinery and laminations and coatings on paperboard.

● **FTC Cites Liquid-Tight Container Makers**—A cease and desist order by the Federal Trade Commission against the Liquid-Tight Paper Container Assn. and eight of its members or former members may bring a halt to what the FTC declared was a "combination and conspiracy to restrain trade and suppress price competition in the sale of their products."

In addition to the association, which has headquarters in Philadelphia, the order was directed to the Boothby Fibre Can Co., Boston; George T. Hynes, trading as the Champion Container Co., Philadelphia; Fonda Container Co., St. Albans, Vt.; Menasha Products Co., Menasha, Wis.; Miro Container Co., Brooklyn; Russell Box Co., Kalamazoo, Mich.; Sealright Co., Fulton, N. Y., and Sutherland Paper Co., Kalamazoo. In its order, FTC said:

". . .Pursuant to agreement the respondent manufacturers, among other things, fixed and maintained uniform delivered prices and adopted and maintained a zoning system whereby the United States was divided into certain zone areas so that all purchasers within a given zone paid the same delivered price, regardless of the distance of the purchaser from the manufacturer. As an incident to and a necessary result of the agreed practice of making only identical delivered prices, the respondent manufacturers, the Commission finds, have forced their nearby customers to pay more to the manufacturers for their products in order that more distant ones might pay less; have deprived nearby customers of any price advantage by reason of their proximity to the place of manufacture; and have thereby arbitrarily and systematically discriminated in price among their respective customers in bad faith in order to suppress price competition among the respondent manufacturers."

The FTC order directs the respondents to cease and desist from these practices.

● **Can Coatings Curtailed**—Brewers, vintners and distillers will no longer be able to get enamels for cans in which their products are packaged since issuance by WPB of an amendment to P-149 which clarifies the definition of "feed" to exclude malt beverages, non-alcoholic beverages, wines and distilled spirits from the end uses to which the rating obtained by the order may be applied. This action fits in with the recent declaration by the Chemicals Bureau, WPB, that "manufacturers who are planning to reconvert to civilian production may face a short supply of suitable protective coatings." Types of coatings reported to be in particularly short supply are light-colored enamels and lacquers normally used for finishing production line items, baked or forced dried. No military cutbacks are contemplated.

● **Tin Control Tightening Likely**—Unless our forces in the Far East free areas where tin is produced and the mining facilities in these areas are developed, further restrictions on the use of tin will be issuing from WPB, that agency has warned. In view of the fact that this country has no domestic deposits, "it does not appear wise," according to WPB, "to reduce the stockpile completely before substantial new suppliers are in sight." WPB placed additional controls on tin use in June by an amendment of Order M-43.

● **Order M-286 Revoked**—It's time for another bright spot in this recital. Makers and users of specialty papers, including glassine, greaseproof and vegetable parchment, probably already are shifting their production and distribution set-up to put these products into civilian channels as a result of the revocation by WPB of Conservation Order M-286, removing restrictions on their use and distribution.

Protection against grease, air and moisture-vapor, flavor protection, insect protection and wet strength made these papers exceptionally valuable to the Armed Services, WFA and other Government agencies. The revocation of the order was recommended by the WPB Committee on Period One, which is seeking to revoke or modify WPB controls no longer essential to the war effort.

● **Steel Shipping Containers**—The steel shipping container industry may look for a let-up, possibly even a revocation, of Limitation Order L-197 about August 1. Transportation problems are easing up, WPB was told recently by an industry advisory committee, and other factors (such as manpower and material) are being studied by WPB with a view to eventually easing or revoking the order.

● **Paraffin Wax Restricted**—Packagers of civilian products which utilize paraffin wax as a water-vapor barrier (as well as those packers who are utilizing paraffin in packaging Army and Navy supplies, such as "K" rations) are likely to be confronted with problems in procuring the material, since the WPB has placed crude scale and refined paraffin under the allocation control of Schedule 108 of Order M-300, the general chemicals allocation order. Civilian users, however, may be able to use raw, slop or slack wax with higher content than crude scale wax, which may be obtained without resort to allocation procedures.

● **No "U. S." Labels**—In an attempt to preclude the confusion which resulted after the last war, from mislabeling of Government rejects, surpluses, etc., the Surplus Property Board has ruled that "Army and Navy," "U. S. Property" and similar advertising of labels are not permitted for goods not originating from the Government as surplus goods and not conforming to Government specifications.

After the last war there were numerous instances of misrepresentation of goods as Government standard or formerly Government owned. To obviate this, the compliance staffs of the Surplus Property Board and the surplus property disposal agencies are prepared to investigate all complaints of surplus property misrepresentation.

Surplus property from the present war is chiefly second-hand property and must be recognized as such. A great deal of it is damaged or obsolete and the most practical efficient disposal, from the Government as well as the public viewpoint, is sale to private dealers for reconditioning or remodeling. Such salvaging operations do not, of course, justify description of the goods in question as produced under Government contract or as Government standard. Nor can property produced for, but not taken possessen of by, the Government be so called.

● **Manpower Shortage**—Difficulties in manning their plants, was the plaint of the Glass Industry Advisory Committee in Washington in June. For this reason, the industry has recommended that orders L-103 and L-103-b, limiting designs and specifications of glass containers and products that may be packed in new machine-made glass, remain in effect.

● **BRIEFLY**—Apparently because it has been having trouble with packages opened for inspection, the Army has banned the practice of opening "containers received from depots marked 'packed for export' and consigned to units alerted for overseas.

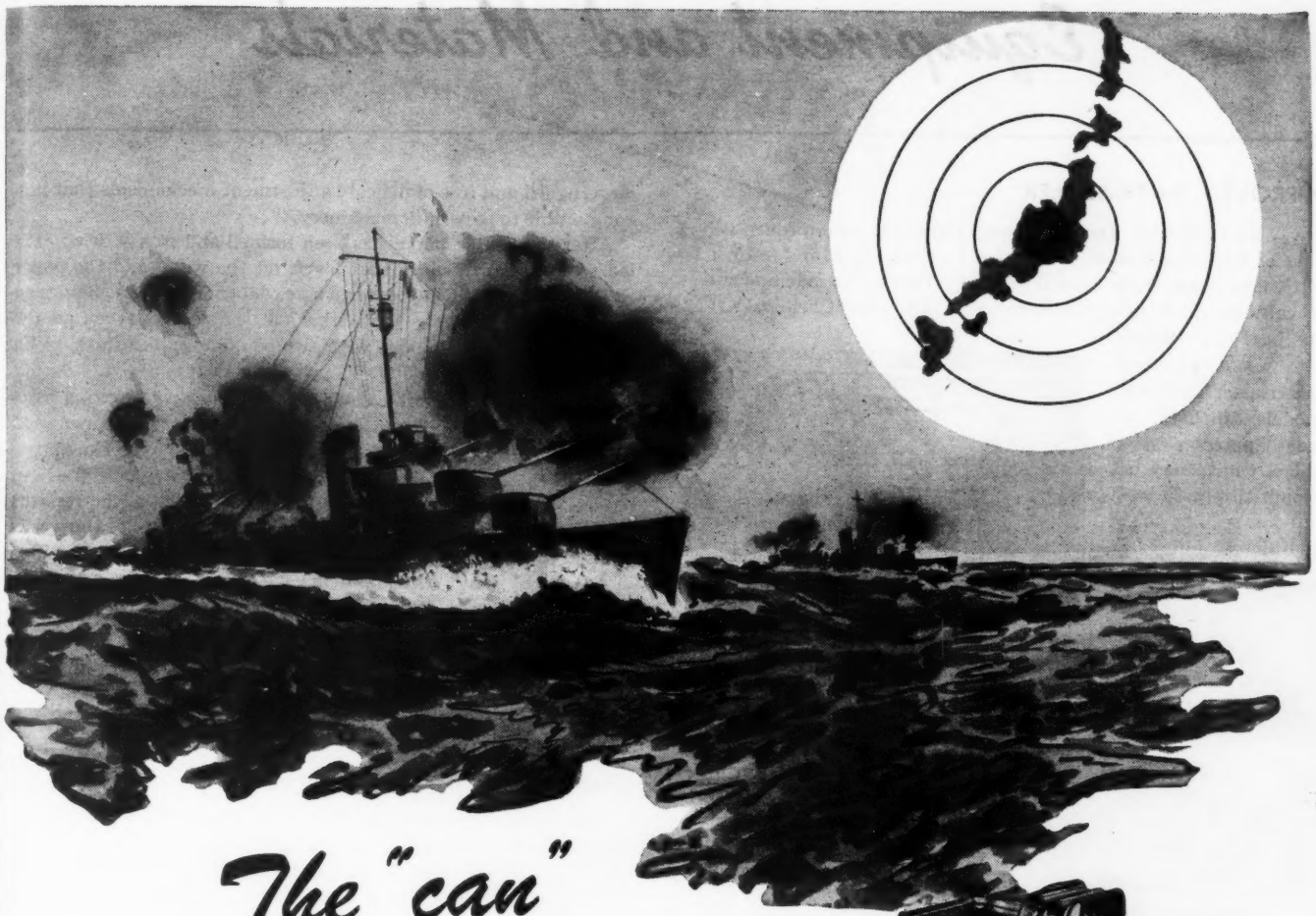
"Once a container professionally 'packed for export' is opened," the ASF circular points out, "the effectiveness of essential processing is often destroyed and both man-hours and expense are required in re-preparation of the contents and container for oversea shipment. In many cases it is not possible to repack the material as adequately as it was originally."

"Containers" will get 1,828,000,000 bd. ft. of lumber under the WPB allotment for the third quarter. . . .

Sodium metasilicate, which is used for paper de-inking and in the production of pulp paper, among other things, has been placed under allocation by WPB.

Manufacturers of jute products can now submit applications, under General Imports Order M-63, for authorization to purchase raw jute and jute butts for July-September shipment from India.

Canadian shippers may now use ratings assigned by the Canadian Government to get metal strapping in the United States.



The "can"

THAT PACKS A SHELLACKIN'

THE lethal qualities of the United States destroyer, as of all our naval craft, have made a lasting impression on the Japs.

Shellac plays an important role in helping to maintain this deadliness. Shellac increases the effectiveness of electrical insulation, helps to protect guns and ammunition against harm from salt air and water, affords equal protection for thousands of peacetime products.

Protecting shellac itself calls for special "know how" in packaging . . . demands containers with special characteristics.

To make sure of packaging their product safely, William Zinsser and Company, Inc., New York, makers of Bulls Eye Brand shellac, use Crown cans.

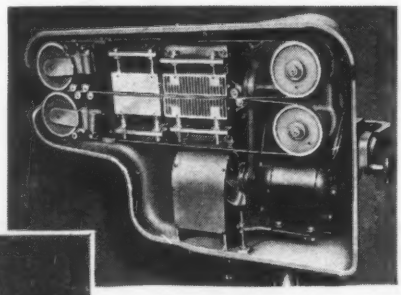
★ ★ ★ CROWN CAN ★ ★ ★

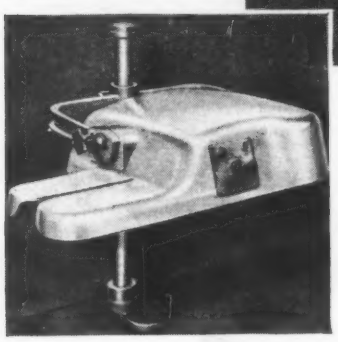
CROWN CAN COMPANY • NEW YORK • PHILADELPHIA • Division of Crown Cork and Seal Co., Baltimore, Md.

Equipment and Materials

IMPROVED "SARA-SEALER"

Sav-Way Industries, Detroit, Mich., announces an improved version of its "Sara-Sealer" (MODERN PACKAGING, March, '45, p. 121), now available in several models. This is the machine specifically designed, in collaboration with The Dow Chemical Co., to heat-seal Saran as well as other materials. The new models include a small portable machine, which may be mounted on a monorail for sealing large containers, and a

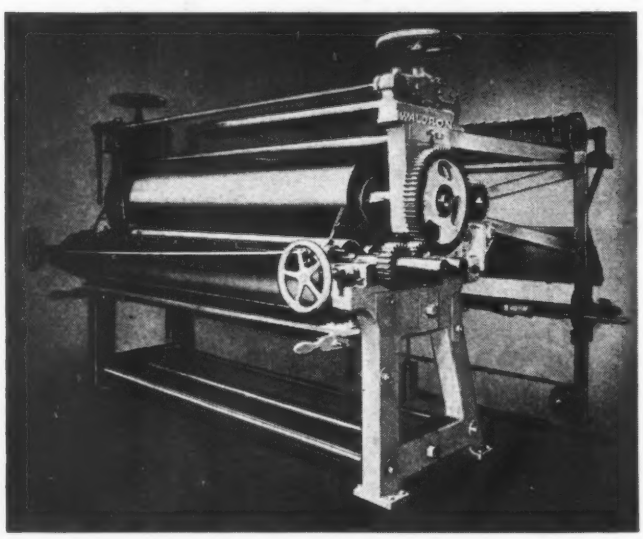




conveyor-type synchronized with conveyor belt. Principle of sealing is the same in all models. Two thin, endless, stainless steel belts carry the film through a heating zone, where two opposed copper bars are heated by resistance principles. The belts then carry the softened film into a cooling zone, controlled to ± one deg. F. Pressure adjustment is accomplished by having one of the heating shoes solidly mounted, but equipped with adjusting nuts for proper alignment. The opposite bar is floated and held against the fixed shoe by springs. Secret of the machine's success in sealing Saran is said to be special design of the heater bar faces, permitting what is called a "temperature gradient" seal.

COATING MACHINE

The John Waldron Corp., New Brunswick, N. J., announces its specially designed rotogravure offset printer, known as the "Synchroset," for installation in a paper machine group, or in relation to a Yankee dryer. The control of the machine is said to be of such character that fine coatings may be precision-metered onto the surface of paper, either on one or both sides; yet the machine is so rugged and free of delicate adjustment mechanisms that it is comparable to papermill machinery.



After the web of paper has been formed and partly dried, it is led to a special calender that levels off the web; and the paper web then passes to the coater where, dependent upon the design of the machine, it is coated either on one side and then on the other, or on the same side with two or more applications, or on both sides simultaneously.

A large diameter resilient offset roll receives the coating from the engraved roll and transfers it to the face of the paper web. This distributes the coating onto the transfer roll in a printed pattern which is maintained to the nip through which the web passes. As the web goes through the nip between the resilient offset roll and a large diameter backing roll, the face of the web is pressed to the face of the offset coating roll.

As part of standard equipment, the coater includes a long life specially engraved roll capable of applying 6 to 7 lbs. of coating to a ream 25 in. by 38 in.—500. A resilient furnish roll feeds the coating material from a pan to the engraved roll.

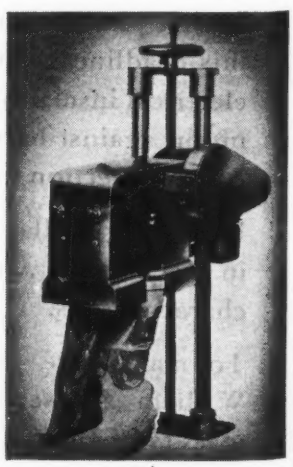
The machine is so designed that, in the event of a paper break, automatic controls relieve contact of the engraved print roll and backing roll with surface of the offset roll and paper web.

WATERPROOF RESIN EMULSION

A solvent-free synthetic resin emulsion for adhering labels to V-board, wood and black or galvanized iron has been developed by the "Resyn" Division of National Adhesives, New York. This adhesive, which may also be used as a waterproof label overcoating, is supplied in cold liquid form and can be diluted with water. When used as an overcoating the emulsion "breaks" immediately, depositing a waterproof, transparent resinous film on the surface which neither clouds nor smears printing inks and is highly resistant to abrasion, the company claims.

ROTARY-TYPE HEAT SEALER

The Codie-Kay Co., Los Angeles, Calif., announces a rotary-type crimp heat sealer that seals cellophane, plastic-treated bag caps and all similar heat-sealing materials. Sturdily built, with no brushes or commutator to wear out, the machine is easily operated. It may be fastened to bench or table and fed by hand or conveyor. Hand-operated raising and lowering adjustment facilitates accommodation of bag sizes from $1\frac{1}{2}$ in. to 15 in. in height. A thermostat control knob, mounted on the front panel, allows temperature regulation up to 700 deg. F. Speed is 240 lineal inches per minute.



All working mechanisms in this C-K heat sealer are equipped with precision ball bearings. Brass rollers are in perfect alignment and are adjustable to any thickness. All moving parts, belts and pulleys are safely guarded. Operates on 110-volt alternating current.

JAW-TYPE HEAT SEALER

Pack-Rite Machines, Milwaukee, Wis., has announced another addition to their line of heat sealers—the jaw-type—which seals bags and pouches of any heat-sealable material. These are fed into the machine in a vertical (*Continued on page 164*)

G. P. BARRIER WRAP

(Grade A, Type II)

NOW AVAILABLE!

Production has been increased to make this possible. Previously, equipment could handle direct military requirements only.

G. P. BARRIER WRAP exceeds the most recent specifications for Grade A, Type II paper (JAN-P-121 and AN-P-12b). A rugged body stock supports a continuous heat-sealable film. Resistance to turpentine penetration more than double the highest standard — real insurance against any run-off or leakage of anti-corrosive compounds.

For packaging "To Go Around the World", Grade A paper is used next to machined or polished surfaces. Packaging Methods I, Ia, and II (ASF Manual 406) all have places for a wax-free Grade A, Type II material.

G. P. BARRIER WRAP *offers more in reliability! From manufacture of raw pulp to finished product, all operations are conducted under one roof with complete, continuous control over each step.*

Real personal help and samples of G. P. BARRIER WRAP are yours for the asking. Minimum order, 2,500 square yards in sheets or rolls. Shipments made direct from mill to producers of war materiel on priorities and contract numbers only. For prices and delivery, write or phone at our expense, outlining sizes and quantities needed.

New grades are in the laboratory stage. Can we develop one especially for you?

GOULD FOR PAPER

REINHOLD-GOULD, Inc.

535 FIFTH AVENUE, NEW YORK 17, N. Y.

Plants and People

Western Products, Inc., Newark, O., announces that the following executives have resigned from **Shellmar Products Co.,** Mount Vernon, O., to join Western Products: **P. M. Gilfillan,** formerly vice-president and general manager; **Fred P. Winslow,** general manager of West Coast operations; **J. H. Gauss,** general sales manager, and **B. W. Kelsey,** plant manager. All of these men are widely known in the packaging field, having been with Shellmar for from 13 to 18 years.

The executives were accompanied in this move by **E. S. Weil** and **I. Grossman,** formerly assistant sales managers for Shellmar in Chicago and New York, respectively; **W. T. Black,** formerly in charge of sales development and promotion, and other sales and operating personnel, according to the Western Products Co.

Western Products' officers now are as follows: **P. M. Gilfillan, president; F. P. Winslow, vice-president; J. H. Gauss, vice-president; B. W. Kelsey, vice-president,** and **E. S. Weil, treasurer. I. Grossman** will have charge of sales in the Eastern Division, **W. T. Black** will continue in sales development and promotion.

Since 1943, Western Products, Inc., has been producing war packaging materials in two plants in Newark, O. It will now operate two additional plants in Marion and Toledo, O. The postwar plans of Western Products, Inc., include the printing and fabrication of all flexible packaging materials in sheets, rolls, bags and pouches, according to the company. A plastic division is being organized to concentrate on the impregnation of fabrics.

Herman B. Lermer, president of the **Celluplastic Corp.** and long associated with the plastic industry, has been made a member of the board of directors of the **Society of the Plastics Industry.**

The first national organization to receive the American Legion's **"Merit Award"** for cooperation in the training and employment of World War II veterans was the Tampa, Fla., plant of the **Continental Can Co.**

At a recent meeting of the board of directors of the **United Paper Board Co.,** resignations were accepted from **Leeds Mitchell,** president; **John Drew,** vice-president and general manager; **Mitchell Todd,** vice-president and secretary. Following is a list of officers reflecting those changes: **Fred Enders,** president; vice-president, **James Todd, Jr.;** vice-president in charge of sales, **H. W. Kephart;** vice-president in charge of production, **P. M. Loddengaard,** and secretary-treasurer, **John F. Cordes.**

Bud Fox Enterprises, New York, have announced a complete merchandising and promotional campaign for **Ideal Twin-Pack Service,** a double wrap feature for bakers to use on bread. Twin-Pack will be licensed on a royalty basis to bakers who will be authorized to package in this manner by means of machinery developed by **American Machine & Foundry Co.**

At a recent stockholders meeting of **Louis Dejonge & Co.,** all officers and directors were re-elected except **C. E. Baker,** assistant secretary-treasurer, who has been replaced by **Carl Clason,** assistant treasurer and manager of the bookbinders' supplies department, and **Pauline Bayer,** assistant secretary.

Sylvania Industrial Corp. has now won its fifth Army-Navy "E" Award for outstanding production.

Edward J. Maroney has just been appointed sales manager for the **United States Plywood Corp.** upon his return from Navy service.

The Miller Printing Machinery Co. of Pittsburgh has bought the **Rotogravure Engineering Co.** of Boston.

Frederick C. Edelston has been appointed sales manager of the **Clarvan Corp.,** Milwaukee, Wis., converters and designers of protective packaging.

Gladys A. Techtmann succeeds **E. A. Beyersdorff,** formerly in charge of national sales for **Pack-Rite Machines,** Milwaukee.

Robert Gair Co., Inc., New York, has announced the acquisition of a new factory site in Binghamton, N. Y.

Harold Hurd has been appointed sales and service manager of **General Printing Ink Corp.** of Canada Ltd. Headquarters will be in the corporation's Toronto offices.

T. J. Beirne has returned to the **National Can Corp.** as general manager of the Chicago operation.

Officials of **Chase Bag Co.,** New York City, have signed the contracts for a new paper bag manufacturing plant at Crossett, Ark.

The Army-Navy "E" has been awarded the **Scandia Mfg. Co.,** manufacturers of packaging machinery as well as highly specialized machines essential to the airplane industry.

Willis M. Rose, president, **Sun Tube Corp.,** greets **Major Pablo Stagni,** head of the **official Paraguayan military group** visiting the United States as guests of the U. S. War Dept. Major Stagni

and his associates toured the Sun plant at Hillside, N. J. This is the fourth South American delegation to visit the company, the others coming from Venezuela, Guatemala and Chile.

Milprint, Inc., has recently opened a new branch plant in Tuscon, Ariz., to be managed by **Ivan Heller,** eldest son of **M. T. Heller,** president of Milprint.

David R. Parfitt has been elected vice-president in charge of sales for the **Thatcher Mfg. Co.,** Elmira, N. Y.

Shellmar Products Co. of Mt. Vernon, O., has won the Army-Navy "E" for the third time adding a second star to the flag awarded the company just a year ago.

E. I. du Pont de Nemours & Co. recently applied to the WPB for a major expansion at the cellophane plant in Clinton, Iowa. If approved, the expansion would take about a year to complete.

The Plastics division of the **Reynolds Metals Co.** is planning an extensive postwar building and research program at Gary, Ind.

Effective June 4, the United States District Court, District of New Jersey, entered an order in proceedings for arrangements under Chapter 11 of the Bankruptcy Act in the matter of the **Seeley Tube and Box Co.,** provid- (*Continued on page 170*)

How a Piece of STEEL and a Little TIN Protect Your Products . . . Your Profits!

• From maker to taker, your consumer goods must be protected against damage of every variety. They are constantly menaced by handling...air...light...moisture.

But these troubles can't creep through steel. So, in the sturdy steel-and-tin can...which is more than 98% steel, less than 2% tin...you have permanent protection against light-deterioration, moisture-deterioration, air-deterioration...positive protection against clumsy handling.

Yes...steel and tin, made into cans, protect products, please retailers and wholesalers, satisfy customers. That's why we say: plan *now* to pack your products in *cans* when cans become available again!

SELLING THE CAN IDEA TO EVERYBODY!

Look for big full-page, full-color ads currently telling shoppers everywhere how convenient *cans* bring them their favorite products with full quality *sealed in!* More than 26,000,000 printed messages appear this month, in five national magazines and in the magazine sections of Sunday newspapers from coast to coast.

CAN MANUFACTURERS' INSTITUTE, INC., NEW YORK

And that's not all!

Steel-and-tin cans bring you these added advantages:

1. They don't break, split, tear.
2. Require no special packing or handling.
3. Cans are light, compact...economical to ship, save shelf and storage space.
4. Stay neat and clean.
5. Cans are easy to display attractively.
6. Labels can be lithographed on cans.

NO OTHER CONTAINER PROTECTS LIKE THE CAN

For Your Information

To establish criteria for ethics, training and practice in the profession, fifteen of the nation's leading Industrial Designers announced jointly yesterday the formation of the **Society of Industrial Designers.** The officers of the Society are: **Walter Dorwin Teague,** president; **Raymond Loewy,** chairman of the executive committee; **Henry Dreyfuss,** vice-president; **Harold Van Doren,** treasurer; and **Egmont Arens,** secretary. The other founders are **Donald Deskey, Norman Bel Geddes, Lurelle V. A. Guild, Ray Patten, Joseph B. Platt, John Gordon Rideout, George Sakier, Jo Sinel, Brooks Stevens,** and **Russel Wright.** The founders are serving as the board of directors of the society, the first organization limited in membership to professional industrial designers. Every industrial designer in good standing in the United States will be eligible for membership so that the organization will be truly representative of the profession. The society has a temporary office at 55 West 42nd Street, New York 18. **Philip McConnell,** has been appointed executive secretary.

Consumer packaging preferences on two popular beverages—coffee and beer—are among the points covered in the **1945 Consumer Analysis** of the **Greater Milwaukee Market,** compiled by the **Milwaukee Journal.** The 1945 analysis asked families for the first time what type of container they prefer when buying coffee. Glass jars drew a preference rating of 48.9%, with 39.3% favoring tin cans and 11.3 per cent paper bags. When both canned and bottled beer are available, 85% said they would buy bottled beer, while 15% preferred cans.

"Protective and Decorative Coatings" is a recently published compilation of lectures given by specialists for the **Plastics Section** of the **Research and Development Branch** of the **Military Planning Division** Office of the Quartermaster General. The purpose of the lectures was to present to the individuals in the Office of the Quartermaster General and other arms, services, and Government agencies who would come in contact with these materials, with the latest developments in organic coatings.

The term "coatings," as used in this book, includes such materials as paints, varnishes, lacquers, textile coatings, plastics and similar materials whose functions may be singly or collectively protective, decorative, or of a technical nature. The lectures supplied basic principles and technical information pertaining to organic coatings, with specific emphasis on the newer developments, during the war period, in synthetic oils, synthetic resins, solvents and thinners, driers, pigments and plastics, which have a direct application to our war effort. Because of the general and specific importance of the subjects of "color" and of "visual and infrared reflectances of pigments and coatings," these subjects were discussed at some length.

An important application of this book to the present crisis in our national life is the aid given to the three most important problems confronting the coating industry. They are: (1) the shifting availability of raw materials, (2) the conservation of raw materials and coatings (3) the preparation of intelligent and workable specifications. The book may be had from the U. S. Printing Office, Price $1.25.

Cleaning and corrosion prevention formed the discussion topic at the May meeting in Chicago of the **Industrial Packaging Engineers Assn. of America. Capt. A. D. Thau,** Chicago District Office, United States Engineers, presided at the meeting.

Leading food manufacturers recently announced a program to put on every grocery product a descriptive label enabling every homemaker to buy accurately according to her own requirements of taste and budget. Announcement of the campaign was made at a press luncheon by the **Grocery Manufacturers' Information Council. J. F. Carroll,** managing director of the council, stated that last fall the **Grocery Manufacturers of America, Inc.** started a concentrated drive for good descriptive labeling on all grocery products based on careful study of consumer needs. A booklet entitled **"The Inside Story,"** just off the press, has been prepared to tell consumers what good descriptive labeling means and how it can work for them. It will be distributed to leaders of women's groups and others with an interest in the promotion of good labels.

E. H. Wadewitz, president of the **Western Printing & Lithographing Co.** will again serve as president of the **Lithographic Technical Foundation** in 1945. Serving with Mr. Wadewitz are **L. H. Jackson** as vice-president and **R. R. Heywood** as treasurer. A newly elected officer and director is **William H. Walters, U. S. Printing & Lithographing Co.,** who succeeds **W. Ottmann,** retiring member of the board as secretary of the organization. The board of the foundation also made a decision to further consolidate and concentrate the lithographic research at **Armour Research Foundation** of Illinois Institute of Technology in Chicago. About August first, all LTF research will be moved to **Glessner House,** a part of Illinois Tech research and educational properties. In addition, the foundation acquired a property at 131 E. 39 St., New York City, which will serve as administration and educational department headquarters in New York.

Neil O. Broderson, head of the **Rochester Button Co.,** has been elected president of the **Society of the Plastics Industry, Inc.** He succeeds **George K. Scribner** of the **Boonton Molding Co.,** who now becomes chairman of the board. Other officers elected were **Geo. H. Clark, Formica Insulation Co.,** vice-president and **Warren E. Hill, Prolon Plastics Division, Pro-phy-lac-tic Brush Co.,** secretary-treasurer.

The **National Meat Canners Assn.** has announced the election of **T. C. Tait, Swift & Co.,** as president; **R. M. Smith, Wilson & Co.,** as vice-president; **J. Emmett Clair, Republic Food Products Co.,** re-elected as secretary; **Henry Manaster, United Packers, Inc.,** treasurer and **C. W. Beilfuss, Derby Foods,** as publicity chairman.

Available for distribution through the **National Paper Box Manufacturers Assn.** will be copies of the 15-page section on **Set-Up Boxes** reprinted from the 1945 PACKAGING CATALOG. Illustrated with photographs and diagrams, the work is the product of highly qualified specialists drawn from the industry. Address requests to the Secretary, National Paper Box Manufacturers Assn., Liberty Trust Bldg., Philadelphia, Pa.

The standing committee set-up of the newly formed **Glass Container Manufacturers Institute** affords assurance that the new organization will perform functions of great and lasting benefit not only for its members but for their customers. These committees will cover the following activities: market research and promotion, traffic, government—industry relations, labor relations, testing procedure, technical aspects of glass-packed products, standards for finishes, container design and specifications, package design and specifications.

Negotiations on the part of **Fred E. Fuller,** counsel for the new organization, resulted in arrangements whereby the four defendant companies in the recent litigation may participate in certain activities of the association. Under the Supreme Court decision none of these four (**Owens-Illinois Glass Co.; Hazel-Atlas Glass Co.; Ball Bros.; Thatcher Manufacturing Co.**) may become members of the Institute; but in view of the fact that none of the activities of the foregoing committees were in question during the litigation, the United States District Court of Toledo and the Department of Justice have consented to an arrangement under which these (*Continued on page 170*)

LIFT TO PRODUCTION

Labels for a varied line sold under one brand name must be properly designed and properly placed on the right glass container to lift the line to maximum visibility and sales appeal. Owens-Illinois' wide experience with the variables of glass "architecture" and label design . . . has helped many firms get more production and more "sell" from Duraglas bottles and jars.

A LIFT TO DISTRIBUTION

Since the Duraglas package was hooked up with the famous fifty-year-old name of KC, the combination has been proving itself as "full of rise" as KC itself.

According to retailer reports promoting the story of how KC's DURAGLAS jar keeps baking powder fresh and strong and dry to the last spoonful, produced a marked "up" in KC movement. It proved baking powder, long regarded by retailers as a staple, was RESPONSIVE TO SPECIAL DISPLAYS.

A LIFT TO SELLING

Duraglas consumer advertising hastens the trend to glass that already plainly exists. For example, decision to put KC Baking Powder into glass was prompted by a survey which showed that, even before promotion, 11,000,000 housewives—a substantial percentage of the nation's total—preferred baking powder packed in glass . . . a preference expressed in sales increases when KC in Duraglas Containers appeared on the market.

OWENS-ILLINOIS GLASS COMPANY
TOLEDO 1, OHIO
Branches in all Principal Cities

Duraglas
TRADE MARK REG. U. S. PAT. OFF.
CONTAINERS!
Preserve, Protect and Sell by Sight

U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at ten cents each in currency, money order or certified check; postage stamps are not accepted.

Parcel Carrier, E. Borbe, Zurich, Switzerland. U. S. 2,374,645, May 1. A parcel handle comprising a gummed paper body member having a pair of spaced perforations therein, a bail member of flexible tape having two looped reinforcing members whose yoke portions project through said perforations.

Sheet Feeding Mechanism,, W. Pecny (to American Can Co., New York, N. Y.). U. S. 2,374,698, May 1. In a high-speed sheet feeding mechanism for feeding blanks from a stack of blanks the combination of a magazine for retaining the stack of blanks, separating means disposed adjacent said magazine for flexing and partially separating an outer blank from the stack in the magazine.

Grease-Resistant Film, J. A. Mitchell & D. D. Lanning (to E. I. duPont de Nemours & Co., Inc., Wilmington, Del.). U. S. 2,374,767, May 1. An oil- and grease-resistant heat-sealable pellicle comprising a base film of regenerated coated cellulose on one side with polyvinyl acetate and nitrocellulose.

Method of Fluid-Tight Packaging, H. F. Waters, New York, N. Y. U. S. 2,374,-793, May 1. The method of fluid-tight packaging which comprises providing a flat envelope constituted of a sheet of paper having a layer of fluid-tight and fusible material bonded thereto folded over along a transverse medial line and sealed along to lateral marginal strips.

Envelope, E. B. Berkowitz (to Tension Envelope Corp. of Kansas City). U. S. 2,374,798, May 1. An envelope including front and back portions, one of said portions being formed by flaps attached to the other portion and having lapping portions forming a seam of double thickness.

Mechanism for Feeding Wrappers from a Stack, A. Russell, M. Parker and R. A. Anson (to The Forgrove Machinery Co. Ltd., Leeds, England). U. S. 2,374,838, May 1. A mechanism for feeding wrappers, labels, sheets and the like in succession from a stack by means of a suction peeler adapted to engage and adhere by suction to the exposed surface of an end-wrapper of the stack.

Display Card and Fastener Holder, J. J. Murphy and A. J. Reisinger (to Autoyre Co., Inc., Oakville, Conn). U. S. 2,374,-881, May 1. A combined display card and fastener holder for an article of manufacture comprising a sheet-like display portion and a fastener-holding portion.

Carrier for Groups of Articles, N. A. Petter, Los Angeles, Calif. U. S. 2,374,-893, May 1. A carrier for holding a group of articles, having a body portion with a wall having a plurality of pockets formed therein to receive the articles.

Cosmetic Container, L. Naidech (to Irresistible, Inc., New York, N. Y.). U. S. 2,375,027, May 1. A cosmetic carrier comprising an elongated casing closed at one end and open at the other and a brush and pigment holder slidably mounted in said casing.

Partitioned Bottle Carrier, A. Wesselman, Cincinnati, Ohio. U. S. 2,375,056, May 1. A container for the packaging of bottles and the like comprising a base, a pair of sides, one each attached to opposite edges of the base and a pair of top members each connected to the upper edge of a side.

Swing Package and Swing Seat. P. DeBruin, Monterey Park, Calif. U. S. 2,375,087, May 1. In a mercantile package made up of a swing seat and a swing rope, the rope being so folded about the seat, so that when the latter is brought to bundle formation is of a size to lie within the area defined by the seat.

Hairspring Container, C. O. Dorau (to The New Britain Spring Co., New Britain, Conn.). U. S. 2,375,088, May 1. A package comprising a solid block of elongated rectangular shape having a row of circular sockets passing therethrough, and a plurality of flat coiled springs arranged in said sockets in groups, said groups being separated by flat washer disks.

Knockdown Hogshead, R. S. McConnell, Norfolk, Va. U. S. 2,375,122, May 1. A hogshead comprising a cylindrical body portion open at each end and formed of a pair of oppositely disposed sections detachably connected together.

Cap Applying Mechanism. J. W. Shera (one-half to McDowell Mfg. Co., Pittsburgh, Pa.). U. S. 2,375,141, May 1. A cap applying mechanism comprising a support, jaw mounted on the support, a cap-seating member adapted to bear against the top of the cap and loosely carried by the support so as to be moved axially relatively thereto.

Sheet Stacking Machine, H. W. Lindgren & F. H. Nemitz (to American Can Co., New York, N. Y.). U. S. 2,375,241, May 8. In a sheet counting and stacking machine, the combination of a counting device for counting individual sheets as they are received from a source of supply.

Container Spout, G. W. Reese (to American Can Co.). U. S. 2,375,248, May 8. A detachable pouring spout for friction top containers having an end member secured to the container body in an end seam.

Combined Spoon and Lid for Containers, R. C. Wilson (one-fourth to R. W. Wilson), Chula Vista, Calif. U. S. 2,375,266, May 8. A combined spoon and lid for containers including a circular disc-like lid member provided with an extended tab portion and provided with three folding lines radiating from the center outwardly whereby said lid member may be formed in a spoon.

Grid Pasting Machine, A. D. Lund(to General Motors Corp., a corporation of Delaware). U. S. 2,375,424, May 8. In a grid plate pasting machine having a paste receptable and plate passageway with primary and secondary feed rollers rotating in the same direction and conveying a layer of paste therefrom and applying it to grid plates.

Packing Bag, R. Faillot, Paris, France (vested in the Alien Property Custodian). U. S. 2,375,544, May 8. A packing bag comprising superposed sheets of packing material, connecting means passing through superimposed marginal portions of at least two of said sheets, and waterproofing material remaining somewhat pasty covering the inner faces of marginal portions.

Can, W. E. Burns (to M. J. B. Co., San Francisco, Calif.). U. S. 2,375,621, May 8. A can having its body portion formed from a blank that has one edge portion folded upon itself to form a triple layer collar about an end of the can body and there being a tearing strip set off in the outer layer of the folded collar.

Bottle Carrier, J. F. deVillard (to Morris Paper Mills, Chicago, Ill.). U. S. 2,375,631, May 8. A blank for forming a bottle carrier comprising a strip of fibrous material having a bottom portion defined by crease lines and side portions beyond said crease lines, and braces cut from the bottom of the blank and the adjacent parts of said side portions, said braces having outwardly directed offsets hinged at their ends to both side portions beyond said crease lines.

Container and Closure with Opening Means Therefore, P. V. DiCosmo (to the Canister Co., Phillipsburg, N. J.). U. S. 2,375,632, May 8. A container having a body of circular cross section provided with means closing the end thereof comprising a rupturable sealing element extending across the end of the body and secured thereto.

Dental Plate Container, S. Gordon, Stamford, Conn. U. S. 2,375,645, May 8. A two-part container for dental plates completely constructed of plastic material, one part being integrally formed with a central transverse partition.

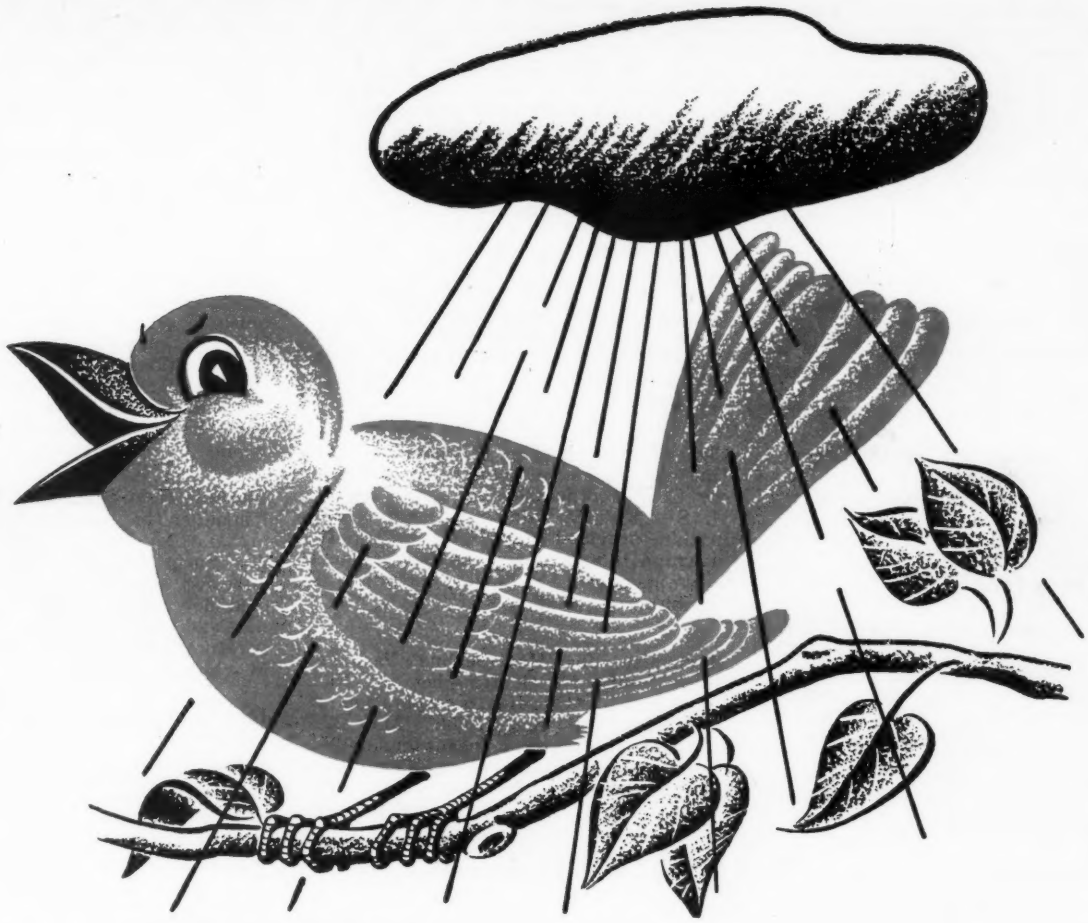
Match Book, R. Guyer (to Waldorf Paper Products Co., St. Paul, Minn.). U. S. 2,375,647, May 8. A match book constructed from a single sheet of foldable sheet material folded back upon itself along lines spaced from opposite edges thereof to form two outer portions of double thickness with intermediate parts adjacent thereto of single thickness.

Ventilated Shipping Box, L. V. Singley, Bloomington, Ill. U. S. 2,375,700, May 8. In combination with a ventilated cardboard box for shipping baby chicks and the like, said box comprising a rectangular body with ventilating openings, spacing devices of vertical cardboard.

Coating Compositions, I. C. Clare (to Hercules Powder Co., Wilmington, Del.). U. S. 2,375,752, May 15. A printing ink comprising mineral ink, oil and ester polymerized rosin and pigment.

Coating Compositions, I. C. Clare (to Hercules Powder Co., Wilmington, Del.). U. S. 2,375,754, May 15. A coating composition comprising a solvent and a high-melting synthetic resin produced by the reaction of a polyhydric alcohol.

Strap Stretching and Sealing Apparatus, W. C. Childress & J. M. Royal (to Acme Steel Co., Chicago, Ill.). U. S. 2,375,769, May 15. The combination in strap

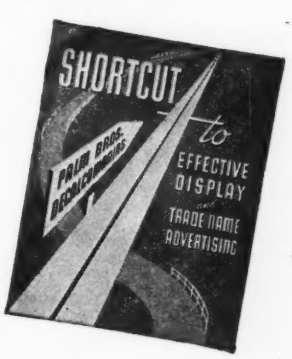


His COLOR never fades

Whether it rains or shines, his color always sparkles, always attracts.

Palm Brothers Decals too, have that quality of permanency that enable your sales messages to sparkle and attract under conditions that tend to obliterate other forms of identification.

Easy to use on any commercial surface, economical to buy, Palm Brothers Decals are your guaranteed marks of success.



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THE PALM BROTHERS Decalcomania Co.

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stretching and sealing apparatus of a base plate adapted to rest on a package, means carried by the base plate for holding a strap with its ends overlapping, and a seal magazine mounted on base plate, and means for removing seals and feeding said from magazine to sealing head.

Coating Machine, C. M. McVey, Denville, N. J. U. S. 2,375,805, May 15. A machine for spraying articles, and means for moving spray nozzles to successive rows of articles to be sprayed.

Container, G. A. Moore, New York, N. Y. U. S. 2,375,809, May 15. A container of a blank of reinforcing cardboard material, a laminated sheet of paper and heat-sealable material constituting a liner for said container to make it hermetically sealed.

Collapsible Shipping and Display Carton, H. A. Gottlieb, Brooklyn, N. Y. U. S. 2,375,843, May 15. A folding carton blank comprising a single piece of material foldable to form a front side wall, a rear side wall, ends and a bottom, said side walls being hinged to said bottom.

Shell Carrier Liner, E. F. Hulbert, Watertown, Wis. U. S. 2,375,993, May 15. In a shell carrier, a shell liner formed of fibre tubing having a tubular portion shaped to fit the body of the shell and a contracted tapered portion shaped to fit the neck of the shell and a lined tubular portion shaped to fit the projectile of the shell and form a shoulder to engage the upper edge of the shell casing.

Packing Apparatus, F. D. Palmer (to Kraft Cheese Co., Chicago, Ill.). U. S. 2,376,003, May 15. An apparatus for closing filled packages having side wall portions extending upwardly beyond the top surface of the package content.

Machine for Wrapping Butter, L. R. Newton (to Industrial Patents Corp., Chicago, Ill.). U. S. 2,376,076, May 15. A machine for forming a package around an article comprising a movable support to receive the article with a wrapping material disposed on each side thereof.

Flask or Jug Liner, A. S. Knapp (to Knapp-Monarch Co., St. Louis, Mo.). U. S. 2,376,064, May 15. In a double-walled heat-insulated container, an outer jacket, and an inner liner of plastic material disposed within and in spaced apart relation to the outer jacket.

Means for Completing the Packaging of Berries or the Like, G. Harrison, Ivanhoe, N. C. U. S. 2,376,138, May 15. An apparatus for finishing the packaging of berries including the application of a cover to the berry box having a band-type rim, the cover having tabs, one for each of the sides of the box.

Blade Dispensing Container, N. Testi (to Gillette Safety Razor Co., Boston, Mass.). U. S. 2,376,206, May 15. A blade dispensing container comprising walls including an annual wall forming substantially circular enclosure having an outlet slot for endwise removal of a blade.

Sealing Machine, J. M. Humphrey (90% to Doughboy Machines, Inc., New Richmond, Wis.). U. S. 2,376,253, May 15. A portable sealing machine including a pair of cooperating sealing rollers, heating means for the rollers and adjustable thermostatic means for controlling said heating means.

Packaging Method, K. R. Karlson (to Union Bag & Paper Corp., New York, N. Y.). U. S. 2,376,256, May 15. A process of packaging which comprises forming a gusseted tube from a sheet of paper coated with impervious thermoplastic material, the coating lying on the inside of the tube.

Packaging Apparatus, K. Stenglein, Saginaw, Mich. U. S. 2,376,289, May 15. In a packaging machine, in combination, a reciprocable material carrying slide, means for releasing predetermined amounts of said material from said slide during reciprocation of said slide and a spout pivotally mounted on and reciprocable with said slide for receiving said materials discharged from said slide.

Cigar Machine-Locking Mechanism, J. F. Halstead (to International Cigar Machinery Co., a corporation of New Jersey). U. S. 2,376,355, May 22. In a cigar machine provided with a source of supply of wrappers and a bunch rolling station, a wrapper transfer device, including a suction carrier head.

Mechanism for Heat-Sealing Package Seam Joints, H. O. Irmscher (to National Urn Bag Co., Inc., a corporation of New York). U. S. 2,376,360, May 22. In a packaging machine, means for supplying bag section units of tubular sheet material coated on the inner side with a thermosetting plastic laminate to the machine, and means for pressure heat-sealing said bags into closed position forming a permanently fused joint.

Sheet Cutter, R. U. Strandberg (to Standard Brands, Inc., New York, N. Y.). U. S. 2,376,460, May 22. In a sheet cutter, with a bed for support of sheet material, a fixed cutting blade, a movable cutting blade and means to guide said movable cutting blade along a path substantially at right angles to the plane of said bed.

Sheet Cutter, C. E. Youngchild (to International Paper Co., New York, N. Y.). U. S. 2,376,470, May 22. Apparatus for successively cutting a series of stacks of sheet material comprising a bed, a knife movable relative to said bed, and an infeed table pivotally attached to said bed and movable from a position in which the top thereof is substantially contiguous with the surface of said bed.

Spectacle Case, C. R. Jerry (to Shuron Optical Co., Rochester, N. Y.). U. S. 2,376,487, May 22. The combination with a sheet metal spectacle case or the like, embodying an articulated lid and a body portion hinged together by means of a pintle and integral alternately spaced knuckle tongues embracing the pintle and proceeding from the rear walls of said elements.

Receptacle, K. H. Dittman (to Jack & Heintz, Inc., Cleveland, Ohio). U. S. 2,376,530, May 22. A shipping container assembly comprising a six-sided inner container for containing an article to be shipped, an outer container of larger and symmetrical proportions to receive said inner container, shock and vibration absorbing means for universally suspending said inner container, said shock absorbing means comprising a plurality of pads.

Method of Re-inforcing Box Corners and Reinforcement Therefor, D. E. Clark (one half to J. E. Dakin, Jr., Lynn, Mass.). U. S. 2,376,660, May 22. A box blank formed and cut for subsequent folding into an open box, container or the like, said blank while flat having secure on one surface thereof reinforcing elements at the side and end portions to be subsequently folded in corner portions.

Bag Making Machine, R. C. Hurrey (to Bagpak, Inc., New York, N. Y.). U. S. 2,376,697, May 22. In a bag making machine including bottom forming mechanism having a cylinder adapted to releasably support a blank for bottom folding operations, means associated with said cylinder for applying adhesive to said blank and means for transversely scoring said blank after the adhesive has been applied to form tucks therein.

Peelable Heat-Seal Sheet Material, E. L. Kallander (to Dennison Mfg. Co., Framingham, Mass.). U. S. 2,376,777, May 22. Sheet material having a thermo-adhesive coating which is resistant to cold flow, substantially free from tackiness and relatively elastic at normal temperatures which becomes pressure sensitive at sealing temperatures.

Heat-Seal Sheet Material, E. L. Kallander (to Dennison Mfg. Co., Framingham, Mass.). U. S. 2,376,778, May 22. Sheet material having a thermo-adhesive coating which is resistant to cold flow, free from tackiness and which at temperatures between the range of approximately 200 to 400 becomes adherent to a wide range of surfaces without substantial loss of film strength.

Closure, R. B. LeRoy (to Bemis Bro. Bag Co., St. Louis, Mo.). U. S. 2,376,790, May 22. A closure for a bag end or the like comprising an expansible gusset strip portion having an expansible portion and marginal portions.

Packing Apparatus, P. B. Richardson (to Richardson Scale Co., Clifton, N. J.). U. S. 2,376,810, May 22. Packing means comprising means for supporting a bag in filling position.

Filling Machine, C. T. Walter (to Industrial Patents Corp., Chicago, Ill.). U. S. 2,376,838, May 22. A container-filling apparatus comprising: a cylinder adapted to receive plastic or semi-solid material; a container-filling spout connected with said cylinder; a metering piston in said cylinder; valve means controlling the admission of said material to and the discharge of said material from said cylinder, means for introducing said material under pressure into said cylinder.

Method and Apparatus for Production of Collapsible Paperboard Bodies for Tubular Containers, H. A. Wansker, Newtonville, Mass. U. S. 2,376,839, May 22. The method of forming cylindrical collapsible bodies for tubular knockdown containers for flavored ice cream from a sheet of paperboard and providing non-obliterable means for identifying the flavor or character of the contents of the container by printing a design upon the sheet.

Cements, S. G. Saunders & H. Morrison, Michigan. U. S. 2,376,854, May 22. A cement of a mixture of synthetic rubber, and an adhesive consisting of a thermosetting synthetic resin and a volatile organic solvent for said resin.

1. Tape holds subassembly parts together — in position for quick final assembly. Saves a lot of valuable man-hours.

2. Tape protects against moisture, dust, corrosion — and colored or printed tapes provide instant identification as well.

3. Tape prevents the chipping of plexiglass during drilling operations. FILMONIZE transparency is an added advantage.

4. FILMONIZE marks defects on castings in bright, easy-to-see colors that can't be smeared or rubbed off.

Tape up all your troubles

More and more factory bosses are saving time, cutting costs—by taping up those *!!:?x*! production bottlenecks with FILMONIZE Self-Sealing Tapes. Are you wise to FILMONIZE?

It's the tape with no "curl back"—no tangle—no waste. It's the tape that *stands up*—on or off the roll—under conditions that lots of tapes just can't take.

Ask your distributor about FILMONIZE. Let him tell you the hundred-and-one different uses for it. See the whole FILMONIZE line: Transparent Tapes, Colored and Multi-Colored Tapes, Printed Tapes, Riveting Tapes, Identifying Tapes, Splicing Tapes, Acetate Fibre Tapes, Metal Tapes, Specialty Tapes, Packaging Tapes. All in widths of ½" to 18".

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INTERNATIONAL PLASTIC CORPORATION

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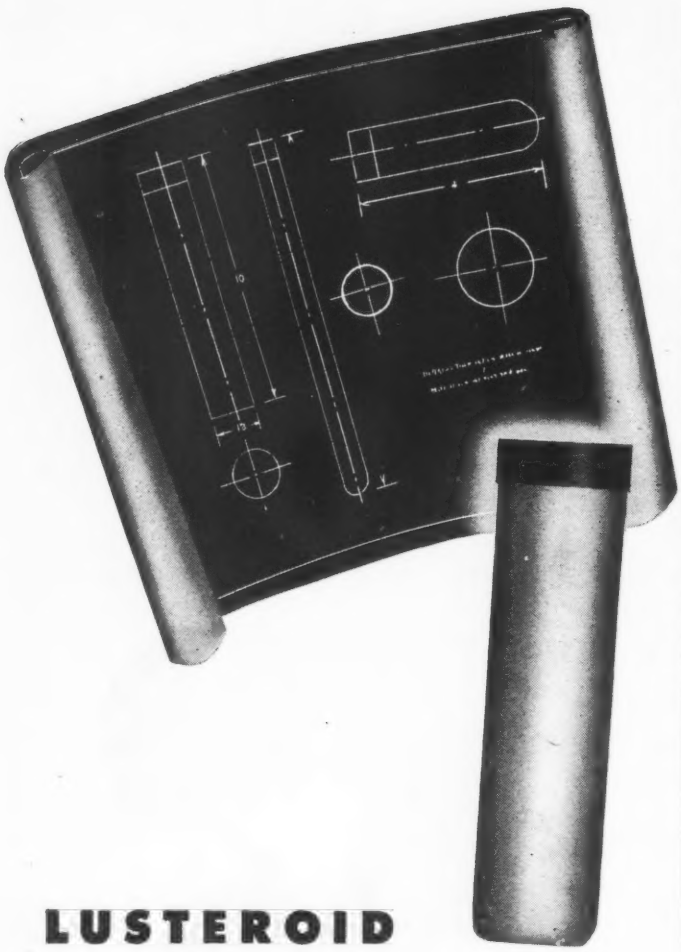

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Pattern for Post-War Packaging

From a merchandising standpoint, an effective package is second in importance only to the product itself.

For many practical reasons, it will pay you to pattern your future packaging around LUSTEROID vials and tubes.

These crystal-clear containers protect as they display. They are featherlight. Unbreakable. Require no labeling because LUSTEROID is printable. No partitioning or protective packing. All colors of the rainbow—clear or opaque.

Sizes ¼" to 1¼" in diameter and lengths up to 6". Cork, slip-on or screw-cap closures.

Write for post-war details.

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Office and Factory
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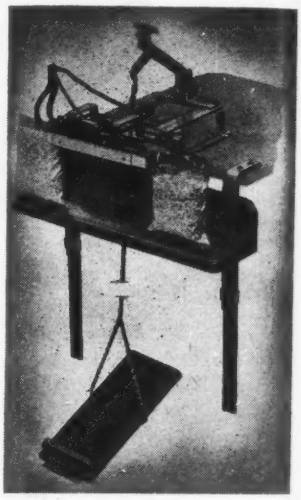
MAILING ADDRESS: SOUTH ORANGE, N. J.

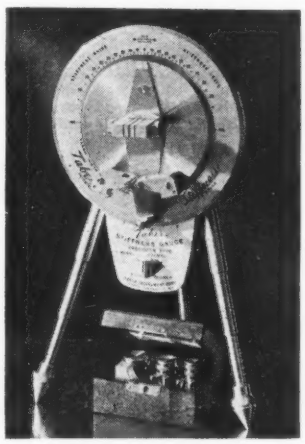
Equipment and material

(*Continued from page 154*) position, causing the contents to shift to the bottom, thus permitting a perfect seal close to the contents of the bag. Slight pressure on the foot pedal actuates two sturdy steel bands which slide smoothly back and forth, bringing the krimping bars in contact with one another. Absolute uniformity of pressure is provided by an arrangement of heavy steel bars through which the pressure members slide. Spring tension returns the krimper bars to feeding position. A feeder attachment is provided, mounted independently of the heated bars, which facilitates feeding of the bags. To facilitate exit, a light wire elevates and spreads the heating element wires, forming an exit bridge. Operates on 110 volts A.C., equipped with thermostat, full-length brass sheathed heating elements and an asbestos guard for protection of operator's hand. Machine is obtainable in three different sizes equipped with either 8 in., 10 in. or 12 in. bars. Also three krimp impressions—horizontal, vertical or flat seal. Adjustable feed tray is additional equipment.



STIFFNESS GAUGE

The Taber Instrument Corp., North Tonawanda, New York, announce the immediate availability of their V-5 Motor Driven Stiffness Gauge for determining standard measurements of the stiffness and resilient qualities of flexible materials up to ⅛ in. in thickness. The instrument, without the addition of attachments, will measure both initial and normal stiffness characteristics of laminated plastic, paper, board, light metallic sheet and wire. Also elastic drift or "creep" of the specimen structure can be charted from the readings.



A set of calibrated weights is furnished with the instrument consisting of one each calibrated in 500, 1,000 and 2,000 stiffness units. Weights of 3,000 and 5,000 stiffness units are also available. For measuring the flexural strength of very thin and flexible materials below 10 units stiffness, an attachment is provided that eliminates mechanical friction and inertia. The instrument is portable, weighs 15 lbs. and can be plugged into any 115-volt, 60-cycle circuit. Bulletin No. 4506 giving complete information is available on request to the company.

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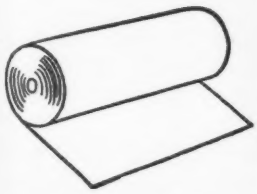
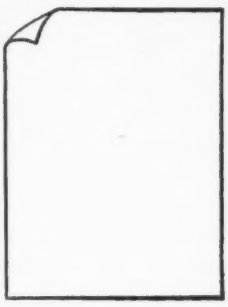
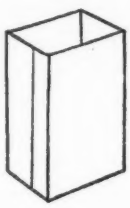


1. STARTS WITH PAPER FROM A ROLL



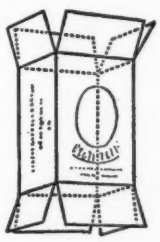
2. CUTS OFF A SHEET OF PAPER



3. WRAPS, FOLDS AND GLUES PAPER AROUND A BLOCK TO MAKE INNER BAG LINER

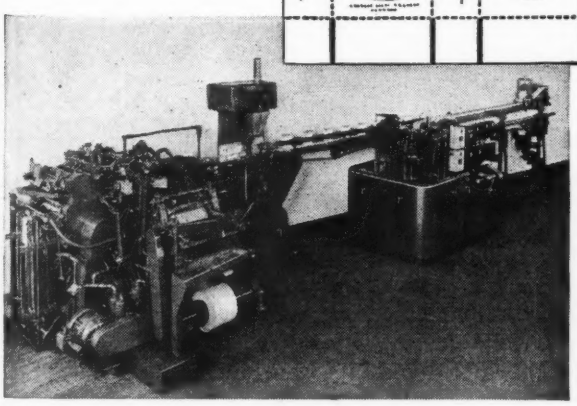
4. TAKES A PRINTED CARTON BLANK

5. FOLDS CARTON BLANK AROUND SAME BLOCK ON WHICH BAG HAS ALREADY BEEN MADE



6. THE LINED, BOTTOM-SEALED CARTON EMERGES FROM THE DOUBLE PACKAGE MAKER READY FOR FILLING

7. PNEUMATIC FILLER OR WEIGHER AND TOP CLOSURE UNIT COMPLETES THE FINISHED PACKAGE WITHIN A PACKAGE



"Pneumatic Double Package Maker, Filler and Top Closure Machine."

FIFTY YEARS OF PROGRESS 1895 1945

PNEUMATIC
PACKAGING AND BOTTLING
MACHINERY

IN Pneumatic's Double Package Maker may lie the answer to your post-war plans for a more practical and economical package for your product. The inner liner is constructed and sealed in such a way that it is a tight package within itself, insuring the lasting flavor and freshness of the product. Improved laminated glassine and numerous other types of papers are now available, and the Double Package Maker will handle either heat seal or glue seal lining materials.

One of the many features about the "double package" is that the inner bag may be sealed to the inside surface of the carton, or left free so that the consumer may easily remove the bag and contents from the carton.

For better packages at "Lower Cost Per Container" consult Pneumatic first. Pneumatic Scale Corp., Ltd. Branch Offices: 82 Newport Ave., North Quincy 71, Mass., San Francisco, New York, Chicago, Los Angeles.

AD INTERIM
Availability

• The Watson-Standard laboratories are ready to assist in supplying you with a protective coating formulated from available materials for your specific coating requirements.

A number of critical chemicals needed by our armed forces to continue the prosecution of the war will of necessity not be available for the production of top quality protective coatings, in the present and immediate post war period.

Your requests for detailed information will be given our immediate attention.

THE WATSON-STANDARD CO.

Factory and General Office:
PITTSBURGH, PA.
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℞ PROTECTIVE COATINGS
Manufacturers of
PAINTS • VARNISHES
INDUSTRIAL FINISHES
AND LITHOGRAPH COATINGS

Jan specs . . .

(*Continued from page 130*) resistance to water penetration; and the moisture-vaporproof transmission rate of Class D bags is limited to 0.20 gram per 100 sq. in., as determined by the MVTR test in JAN-P-131.

Since the specification covers the completely fabricated bag, values are established for the oil-resistance and waterproofness of seams. Greaseproofness is measured by putting a small quantity of oil in the bag and determining the length of time required for delamination of the bag material or for oil penetration through the bottom or side seams. Any visual evidence of delamination or penetration within 24 hrs. is considered cause for rejection. Par for waterproofness of seams is established at 12 hrs. and is measured by sprinkling dry indicator powder on the inner surfaces and noting the time it takes to change color when floated on water.

Strength requirements are included for three different types: Type I, Heavy Duty; Type II, Medium-Heavy Duty; and Type III, Light Duty. It will be noted that the type descriptions are the same as those in JAN-P-121 and, indeed, the strength properties required of the bag materials are those established for Grade A greaseproof materials. As further control, maximum size-type relationships are provided which permit the use of Type I bags only on sizes exceeding a total surface area of 90 sq. in., Type II on sizes up to 90 sq. in. and Type III on sizes up to 50 sq. in.

The notes further provide that only on specific approval of the procuring agency should contents of bags exceed 10 lbs. in weight. Actually, field experience has shown that great care must be exercised in the selection and application of bags for any weight and size of contents. Sharp projections and edges must be protected with suitable cushioning materials, and except for lightest loads—not more than 1 lb. usually—each bag should be packed in a smooth-fitting folding carton or set up box. Protection-wise, these bags can show tremendous savings over other packaging materials and techniques, but too often it has been the experience of the services that contractors were prone to use them for various types of spare parts for which they are simply not suitable.

The nature of the bag material itself indicates the proper end use for these bags. Class A is primarily for Method I packaging, where no waterproofness is required. Class B is for Method 1-A applications where the preserved part is pre-wrapped or pre-bagged in greaseproof material. Class C is for general Method I-A application and Class D for those special Method I-A packages where moisture-vaporproofness is considered essential but which do not require a desiccant. Laboratory and field data accumulated to date indicate that there is a satisfactory correlation between these Class B, C and D bags and their ability to withstand the Method I-A rough-handling and cyclic exposure tests. Until such data are conclusive, however, the specification draft provides that the procuring agency may require that samples submitted for qualification undergo the complete cycle, in addition to meeting the material, strength and construction requirements of the specification.

This is one of the newest of JAN specifications and will require a certain amount of seasoning before it can be properly evaluated. It fills, however, an important niche in the series and would have been invaluable had it been available earlier in the program.

JAN-P-124 is the only general specification released to date for metal containers. It is understood that this specification is now undergoing complete revision so that discussion of its

Coca-Cola

REG. U.S. PAT. OFF.

SYMBOL OF PRODUCT EXCELLENCE

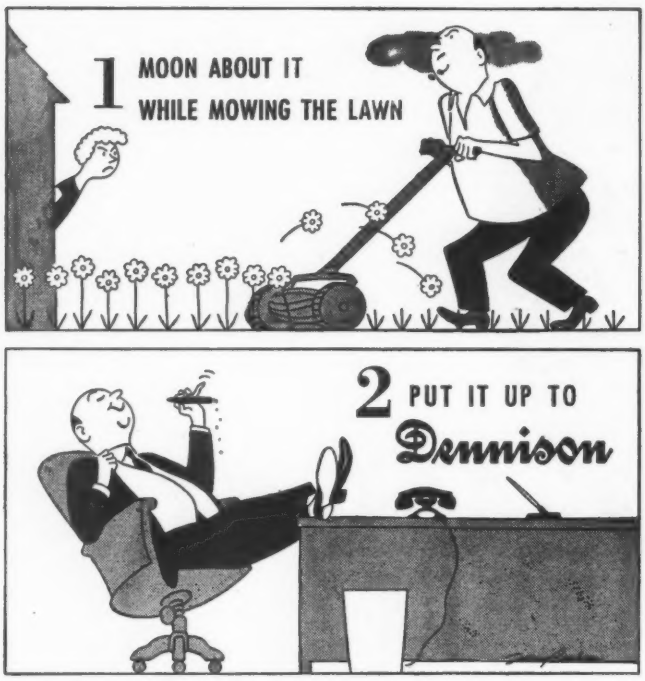
THIS TRADEMARK represents top quality and value in a beverage. People the world over know this to be true. Top quality advertising reflects the high standards maintained in the production of COCA-COLA. For years we have been privileged to develop and produce much of the lithographed display material carrying those messages on the highways and at points of purchase—wall cards, counter displays, window displays, back bar displays, 24-sheet posters, store posters. The name FORBES, too, has become a symbol of product excellence during our 83 years of service to many American industries. This experience can help YOU in developing fruitful duration and postwar advertising material.

FORBES LITHOGRAPH CO.

NEW YORK CLEVELAND CHICAGO ROCHESTER

P. O. Box 513 Boston 2

Two Ways to Solve Your Problem on Die-Cut Paper Specialties



Your present-moment production problems, *like ours,* may be directly related to war work. At the same time your *thinking* must include plans for the peacetime products you will make and sell when this war is over. Plans to resume manufacture of a prewar product, or bring out an entirely new item may even at this point have brought forth the necessity of a die-cut paper or paperboard gadget. Maybe the gadget is to be a component part of the product itself. Maybe it's a printed promotional device to hang on the neck of a bottle, to snap in the top of a can, or to lock around a handle.

That's where Dennison comes in. Whether you want an onionskin washer or an eyeleted binder board disc . . . whether it's to be a merchandise card to hold bobby pins or an arrow that points out the special construction feature of a shoe, we think our gadgeteers are a source of help you can't afford to pass by. So even though you are still in the planning stage, put your problems up to

Dennison

PAPER PRODUCTS FOR MORE THAN A CENTURY

We're in war work, too. In fact, that work has added considerably to our long experience in die-cutting paper components and specialties for the leaders of American industry. Right now it practically limits us from offering more than help in development work. But if you'd like to plan today in preparation for tomorrow, write Dennison, 227 Ford Ave., Framingham, Mass.

TAGS • LABELS • SEALS • SET-UP BOXES • MARKING SYSTEMS • PAPER SPECIALTIES

present provisions might be misleading and cause confusion.

The other two metal container specifications—JAN-P-110 (Drums, Metal, 55-gallon) and JAN-D-195 (Drums, Steel for Calcium Chloride, 100-lb. Capacity)—were developed for specific and limited end uses and are not of sufficiently general interest to warrant discussion in this paper.

Group IV—procedural instructions

The fourth group in the JAN packaging series covers the application of all the other groups to specific items or classes of supplies. They are in effect procedural instructions, written in specification form, to provide uniform guidance and adequate standards for the package designer and the inspector alike. This "recipe book" type of specification has not proved entirely satisfactory. The JAN specification form is too rigid for the smooth presentation of procedures required for actual packaging operations.

Furthermore, going back to our consideration of the functions of a specification, we find that it is difficult, if not impossible, to establish adequate and enforceable standards for performance when, as in the case of JAN-P-196, we are dealing with some 200 different parts.

For these reasons, the Services have recently decided that in the future procedural instructions will be issued as Joint Army-Navy Packaging Instructions—JPIS—rather than JAN specifications. There will no doubt be some measure of standardization in the general sequence of the instruction, in its format and in its title page, but beyond that, full latitude will be permitted to present the requirements in the clearest, simplest manner possible.

It is beyond the scope of this paper to discuss this fourth group of specifications in detail. In general, they simply establish those methods and materials to be used on the individual items or parts covered. In most cases, a certain amount of selection between materials and methods is permitted. Thus, the Bearing Specification, JAN-P-197, requires Method 1-A preservation, but offers three alternate techniques for lighter bearings—a Class D bag (JAN-P-117), a Grade C conforming wrap and dip-coating, or a carton overwrap and dip-coating. In others, as in JAN-P-196, the choice is limited to only one method or material. This was done at the request of industry, which had been plagued by varying interpretations of inspectors as to just what constituted an acceptable Method I, I-A or II package and who wanted it straight from the shoulder with no latitude.

These specifications have served a most useful purpose, and have demonstrated both to industry and to themselves that the Services can agree on fundamental requirements.

The accumulation of test and field data, around which these specifications were written, has been a long, tedious process. The men who worked behind the scenes deserve—and seldom receive—a world of credit.

The largest corsage should, of course, go to the Forest Products Laboratory of the U. S. Department of Agriculture. There is scarcely a specification in the whole series for which they were not responsible, in whole or in part. Supplementary to the Laboratory's contributions on all fibre and wood materials have been the basic research and development of preservation methods and materials by the Engineering Laboratories of Frigidaire, the experimental laboratories at Wright Field and the Naval Aircraft Factory and Ordnance Laboratories at Aberdeen and Rock Island.

Finally, both in the preparation of specifications and in the manufacture of satisfactory products, industry has shown an invariable spirit of cooperation that has been encouraging to the Services throughout this whole strenuous period.

LIMESTONE

serves a double purpose in glassmaking

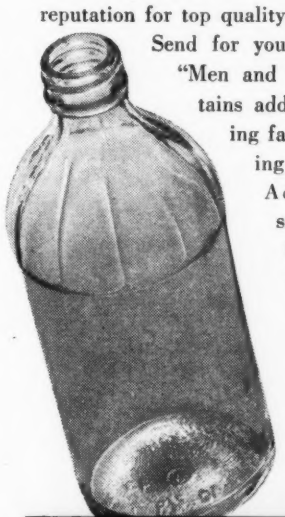
BESIDES making finished glass harder and more durable, limestone also affects the rate at which the melted glass "sets up" or solidifies. The right amount of limestone makes glass form well and faithfully reproduce the precise shape of the mold. Too much limestone makes glass "set up" so rapidly that it can't be worked at all.

Glassmakers have used limestone for centuries. Today they use it either finely ground or burned. Only during the last forty years, since automatic machinery replaced human glassblowers, have they had to carefully allow for the "setting up" problems it creates.

The hand glassblower didn't have to worry about this. If his glass tended to solidify before he had finished shaping it, he simply held it in a flame until it was soft enough to work again. But automatic machines can't manipulate glass like this.

So, today the modern glassmaker must exercise great care to use just the right amount of limestone—enough to make the glass "set up" in the mold, but not so much that it will solidify before it can be properly formed.

Long experience and constant research have given Armstrong's glassmakers keen insight into the use of limestone. Their knowledge is just one more reason why Armstrong's Glass continues to enjoy a reputation for top quality.



Send for your free copy of "Men and Glass." It contains additional interesting facts on the making of fine glass. Address Armstrong Cork Co., Glass and Closure Div., 5907 Prince St., Lancaster, Pa.

ARMSTRONG'S GLASS

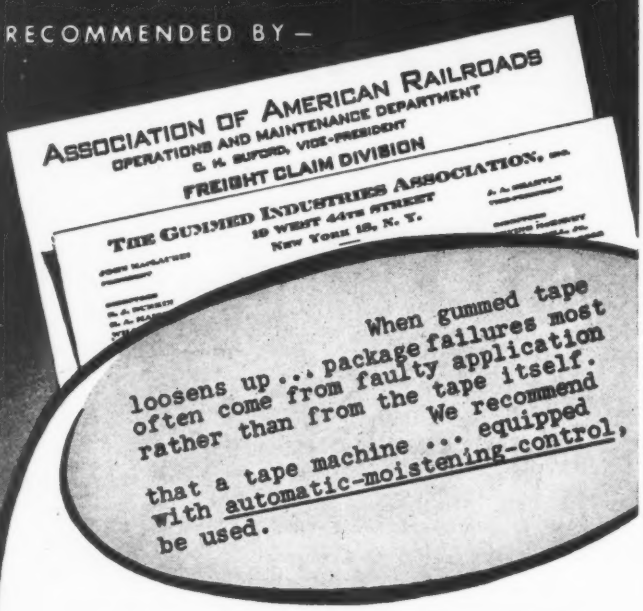
and

ARMSTRONG'S CLOSURES

For Product Protection

AUTOMATIC MOISTENING CONTROL

RECOMMENDED BY—


ASSOCIATION OF AMERICAN RAILROADS
OPERATIONS AND MAINTENANCE DEPARTMENT
FREIGHT CLAIM DIVISION
THE GUMMED INDUSTRIES ASSOCIATION, INC.
When gummed tape loosens up ... package failures most often come from faulty application rather than from the tape itself.
We recommend that a tape machine ... equipped with automatic-moistening-control, be used.

PLUS VALUES YOU GET WITH COUNTERBOY

Besides Automatic Moistening Control, which means the elimination of the human element in the conditioning of all gummed tape used for product protection, Counterboy material saving features cut tape costs from 10% to 40%; and Counterboy's fast dispensing during rush hours means quicker and better shipping service.

Counterboy

TAPE-SHOOTER has original patented AUTOMATIC MOISTENING CONTROL

JUNIOR Model

Manufactured by

BETTER PACKAGES, Inc., Shelton, Conn.

Branch Offices: CHICAGO · NEW YORK

Canadian Factory: TORONTO

Plants and people

(*Continued from page 156*) ing for payments to creditors of 100 cents on the dollar. By virtue of the order, the trustee is removed and the corporation operates in its own behalf.

Robert W. Lillis has been appointed district sales manager of the newly opened Pittsburgh sales office of the **International Paper Products** division of **International Paper Co.**

Hart B. Leitenberger has been promoted to the post of sales manager of the Eastern district of **J. M. Huber, Inc.**

Frank Elsworth, recently executive assistant to the Director General of the Australian War Supplies Procurement Commission, has joined **Dewey Almy Proprietary, Ltd. of Melbourne, Australia,** as managing director. He plans to leave in October.

Bernard W. Reich has joined the **Industrial Packaging Co., Inc.,** Brooklyn, as sales manager of the plastics packaging division. Mr. Reich formerly was sales manager of **G. Flesenthal & Sons,** Chicago plastic fabricators and molders.

Package machinery manufacturers were guests of **Reynolds Metals Co.** at a luncheon recently at the Waldorf-Astoria, New York. **V. W. Moody, Jr.,** Eastern Sales Manager, presented leading developments in aluminum foil packaging for postwar. Reynolds Metals also announces the removal of its New York offices to 19 E. 47th Street.

George A. Speilman and **Leonard Arthur Wheeler** recently announced the formation of **Pacific Designers** in Los Angeles.

Dr. Earl W. Gluesenkamp and **Dr. James H. Lum** have been appointed assistant directors of research of **Monsanto Chemical Co.'s** central research laboratories, Dayton, Ohio.

"Bemistory," the 24-page, monthly employee publication for the 8,000 **Bemis Bro. Bag Co.,** recently won three of the six awards given by **The Industrial Press Assn.** of Greater St. Louis.

Jack Beierwaltes, formerly sales manager of **E. J. Kelly Co.,** ink makers, has joined the **Watervliet Paper Co.,** manufacturers of label, offset and coated book papers.

Hammond Harban, after 33 years of service with **Sefton Mfg. Co.** and **Container Corp. of America,** recently announced his retirement from active business.

For your information

(*Continued from page 158*) defendant companies can participate in the work of the committees, contributing money, information and plant facilities, but they cannot direct or control any committee work.

The new organization is off to an excellent start numbering among its members all but four of the non-defendant companies who manufacture glass containers. The officers are as follows:

President, **George F. Lang, Carr-Lowrey Glass Co.;** 1st Vice-President, **F. H. May, Foster-Forbes Glass Co.;** 2nd Vice-President, **I. R. Macdonald, Dominion Glass Co., Ltd.;** General Manager, **V. L. Hall;** Secretary and Treasurer, **H. W. Kuni;** Counsel, **Fred E. Fuller,** Welles, Kelsey, Fuller, Cobourn & Harrington.

More than 2,000 formulas for mixing and making thousands of products are included in **Vol. VII** of **The Chemical Formulary,** published recently by the **Chemical Publishing Co.,** Brooklyn, N. Y. (Price $6.00). These formulas have been collected, tested and edited by Harry Bennett with the assistance of some of the country's ablest chemists. Unlike other volumes, Vol. VII was designed primarily for the layman and it is believed that it will be of great help to veterans about to start in small businesses.

NEWSWEEK

Fancy kitchen canisters.....Colorful plastics for rulers

Tamper-proof cans for motor oil...And paper cups for "coolers"

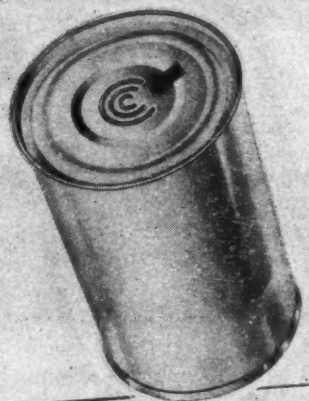
ARE ALL MADE BY CONTINENTAL CAN COMPANY

* **Yes, we make many** things besides quality metal containers. One reason we're able to is Continental Research.

Highly trained men and women create new and better products and improve existing ones. For example, the easy-to-open Cap-Sealed can for beer and ale was developed by laboratory research.

Today, most of their work is for our fighting men. But when this war is won, keep your eye on Continental and on the Continental trademark, too. You'll be seeing the Triple-C more and more in industry and in your home.

★ ★ SALVAGE EVERY TIN CAN ★ ★



Products and Divisions of Continental Can Co.
100 East 42nd St., New York 17, N. Y.

CONTINENTAL PRODUCTS: Metal Containers · Fibre Drums · Paper Containers · Paper Cups · Plastic Products · Crown Caps and Cork Products · Machinery and Equipment.

OPERATING DIVISIONS: The Container Co., Van Wert, Ohio · Keystone Drum Company, Pittsburgh, Pa. · Boothby Fibre Can Division, Roxbury, Mass. · Mono Containers, Newark, N. J. — Plastics Division, Cambridge, Ohio. · Bond Crown & Cork Co., Wilmington, Del. · Cameron Can Machinery Co., Chicago, Ill.

FOREIGN SUBSIDIARIES: Continental Can Company of Canada, Limited, Sun Life Building, Montreal, Canada · Sociedad Industrial de Cuba, S. A., Havana, Cuba.

KEEP YOUR EYE ON CONTINENTAL — FOR PACKAGING AND PLASTIC PRODUCTS

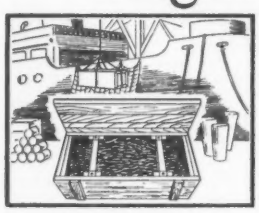
Tune in "REPORT TO THE NATION," every Saturday over CBS coast-to-coast network.

EVERY AD in this series points out how greatly Continental's expanded resources and facilities have increased the service now available to you. So look for this series of ads full-color in leading national magazines—*Time, Newsweek, U. S. News, Business Week, Fortune.* Keep your eye on Continental, and on the Continental trademark, too! The Triple-C stands for *one* company with *one* policy—to give you only the very best in quality and service.

PROTECTION by

1895 Angier OF FRAMINGHAM 1945

War Has Proved It "Right" for Peace



BROWNSKIN

The government and many war industries require an extra-tough, non-deteriorating, waterproof material for wrappers, tarpaulins, caseliners, etc. BROWNSKIN meets the needs.

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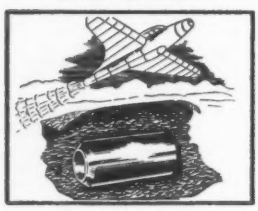
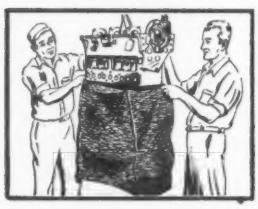


INDUWRAP

Airplane engines and parts urgently need a greaseproof protector to prevent corrosion. INDUWRAP was developed to more than satisfy all Grade A, Type I specifications.

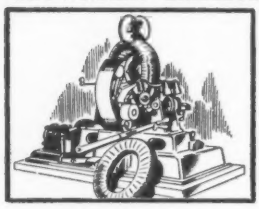
•



BROWNSKIN GRIZZLYBEAR

Engines enroute overseas were being damaged by the elements. The problem of how to protect them was a very serious one. A-19 BROWNSKIN GRIZZLYBEAR is helping to solve it.

•



GRIZZLYBEAR

Many shippers of airplane motors and coils of critical wire are successfully protecting their products with GRIZZLYBEAR, using both the asphalt and A-19 resinous grades.

1895-1945 . . . A HALF CENTURY OF PROTECTION TO PRODUCTS OF OUR NATION AND ITS INDUSTRIES . . IN PEACE AND WAR

In asking for samples and literature please mention by name this magazine.

Angier

ANGIER CORPORATION

CORROSION PREVENTIVE AND WATERPROOF PAPERS

FRAMINGHAM, MASSACHUSETTS

Report from the Pacific

(*Continued from page 99*) past year. Lt. V. L. Stouffer (a former attorney from Columbus, Ohio), the officer in charge of packaging at the Naval Supply Depot in Pearl Harbor, has developed a splendid corps of packaging experts from a heterogeneous mixture of Navy personnel and civilians who had never heard of fibreboard or moistureproof wrapping before the war. They learned the hard way by finding answers to complaints and when the U. S. Navy moved into the South Pacific the principal comment about packaging from the battle area was "terrible."

Lt. Stouffer has seen a vast change in his tour of duty. Aside from remedying packaging failures his department has performed such tasks as packing up Admiral Nimitz's headquarters and moving them to Guam and building an 18 ft. by 9 ft. by 11 ft. radio shack that could be shipped on deck without a drop of moisture penetrating into the vital innards which it contained and the careful wrapping of every item and masking of every opening in the delicate instruments.

Their chief duty is to repack all shipments going to combat or advance bases so that no food will spoil nor rust will penetrate. The standard treatment developed is as follows:

The item is carefully cleaned and dipped in either a soft or hard rust preventive, of which there are several types. The article is then wrapped in acidproof grade A red paper over which is wrapped grade C green paper which has been impregnated with wax and can be formed tightly around the article. The whole business is then dipped in hot wax which will remain flexible at temperatures ranging from freezing to 120 degrees. The article is placed in a cardboard container (V-box if they have it), wrapped with kraft paper and again dipped in wax after identification both inside and out. The cardboard box and contents are then placed in a wooden box with waterproof asphalt liner, sealed with rubber cement.

Not every item is that carefully guarded, but the most vital ones are. And in order to prevent such containers from becoming a pail in case of puncture from a nail, one man devotes his entire time to careful inspection.

The favorite and most used wrapper for rust prevention is grade C green paper or fabric (ordinary cambric) impregnated with wax, perhaps with a cellulose laminated sheet. It is formed around the item to be protected and the entire item plus its wrapper is then wax dipped, placed in a fibreboard container, wrapped with waterproof paper and sealed with tape. Another variation is to place the item such as a pencil sharpener in a fibreboard container, wrap the container securely in grade C material and immerse the entire package in hot, microcrystalline wax.

For larger metal items that require wooden boxes, numerous waterproof liners have been developed, but safest is reported to be laminated crepe paper and asphalt—60–60–60.

The superior moisture-proof barrier, as distinguished from waterproofing, is laminated metal foil, with fabric prefererd over paper for the backing. Many items, electronic parts in particular, require both. The part is wrapped in metal foil as a moisture barrier, with silica gel included. The fibreboard box in which it is placed is in turn encased in a wooden box equipped with a waterproof liner.

The writer's opinion is that packaging has performed miracles in this war and many of its critics in the services have little concept of what superlative performance really is, but there is no denying that even one spoiled box of food or ammunition represents wasted effort, loss of valuable material and even the difference between life and death.

Another Wartime Job for Famous

RALSTON L-2 TEGUMAT CASE LINERS

When these practice bombs are shipped to faraway bases—the big job is to get them there dry. That's where Ralston L-2 Tegumat comes in. With this waterproof and flexible brown and brown infused laminated paper, we are making the man sized case liners pictured above. These provide positive protection against dampness which might easily render the bombs useless.

This is another example of Ralston's ability to handle the difficult assignments. Ralston experts are prepared to assist you in solving your problem of "getting it there dry" whether the product be as large as these bombs—or as small as a pair of aviator's gloves. Write, phone or wire today!

W. Ralston & Co., Inc.

Niagara Falls, N. Y.

Founded 1890 — Incorporated 1918
Plants at Niagara Falls, New York and Old Bridge, New Jersey
Saturated Papers—Building Papers—Reinforced Papers—Duplex Papers—Case, Barrel and Bag Liners—Creped Papers—Laminated Specialties
Sales Office—220 E. 42nd Street, New York, N. Y.

FMC—KYLER LABELERS

Simpler

The extreme simplicity of FMC-Kyler Labelers results from the absence of complicated mechanisms. This quality labeler does more and better work with about one-third fewer parts. One operator quickly and easily makes all adjustments for change in sizes of containers.

And also has these other unusual features! *Handles a wider range of work. *Lap Paste System. NO DRIP. Automatic adjustment for any width label. *Large Label Box holds two full packs of labels. *Automatic Control. If discharge chute is full, labeler stops. *Lower Operating Costs. Uses less paste and gum. *Lower Maintenance Costs. Fewer repair parts needed, and they cost less. *Speedy Size Change. No tools needed. All change points marked. *Seaming Pad easily removed, self-adjusting. *Adjustments provided for every possible need. *Sturdy, long life.

FMC — KYLER BOXER

All sizes have one-piece main frame construction, are extremely rigid, with great strength and durability. Maximum speed with minimum man power and floor space.

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K-102

Food Fights for Freedom—Food Nourishes the Nations

FOOD MACHINERY CORPORATION

Sprague-Sells Division · Hoopeston, Illinois

Aluminum foil . . .

(*Continued from page 102*) proved that gravure printed foil could be overcoated with high gloss lacquer to simulate the shine of transparent packaging materials but this type of coating did not incorporate heat-sealing agents. Suitable lacquers have now been developed which may be applied over gravure printed foil that will heat seal to itself or seal to the paper side of a foil lamination. The lacquer is formulated to permit the material to slide over the heating elements without tacking or stringing. This material, it is believed, will operate in any machine that normally handles rolls of heat-sealing cellophane or waxed paper.

Foil laminations for unit packs

A growing demand for what are known as unit packs—that is, small packets for individual servings of coffee, lemon powders, medicines, etc.—is creating a new interest in foil laminations for making face-to-face packages on automatic machinery. Best known foil material for this purpose is commonly known as "soluble coffee stock," a lamination of cellulose acetate and aluminum foil thermoplastically coated on the aluminum foil. In addition to drink powders—coffee, grape crystals, orange crystals, etc.—such items as sulfadiazine and motion sickness preventives have been widely packaged in this manner for military uses. Such types of packages offer the manufacturer of tomorrow excellent small units at an economical cost particularly due to increased capacity of production facilities.

Plain foil uses

Plain aluminum foil, printed but not laminated, will also be used in increasing quantities for a number of protective purposes. Just on the market is a new package adopted by Sardik for dehydrated tomato powder which is extremely hygroscopic. Plain aluminum foil, 0.0015 in. gauge, thermoplastic coated and gravure printed is used for this package in contrast to the laminations specified for military packaging at about one-half the cost of the laminated material.

For many civilian requirements this heavier plain foil will offer eye appeal and at the same time protection at a considerably lower cost than a laminated material. Plain foil is also a practical wrap for 5-cent packages of hard candies. The Beech-Nut assorted candy drops illustrated here are wrapped in 0.0007-in. aluminum. Formerly many packages of this type were made with a wax lamination of foil and paper. A waxed paper wrap is used inside the foil to prevent wrinkling between candies and thus maintains a smooth surface.

It is believed that the economies effected by the use of heavier gauge plain foil will lead to a wider use of this material for candy packaging and for such applications as packaged rolls of photographic film.

Cathodic protection with foil

Foil for wrapping many types of steel and metal parts may find its way into civilian packaging as a result of the pioneering efforts of Maj. J. A. Calamari, Medical Administrative Corps, U. S. Army, in the development of cathodic protective packaging of surgical instruments (MODERN PACKAGING, Feb. 1945, p. 125). In this application metal parts are dipped in light preservative oil. Aluminum foil is then pressed into close contact with the part to be packaged. In the event that moisture present in the air inside the package penetrates the preservative, the electrolytic action, it

WHAT WILL THE POST WAR METAL PACKAGE IN YOUR INDUSTRY LOOK LIKE?
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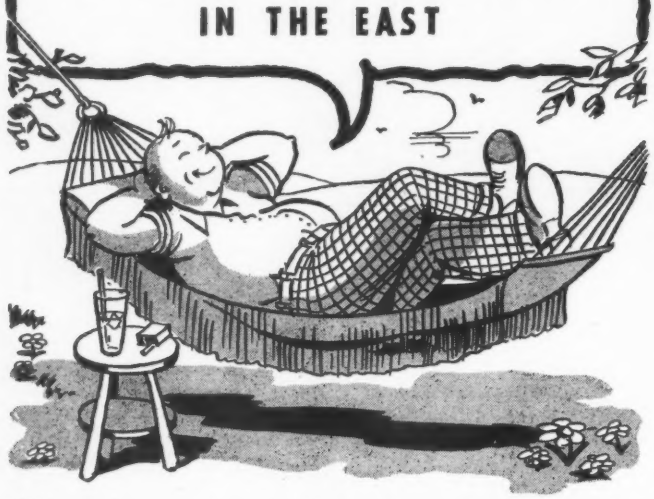

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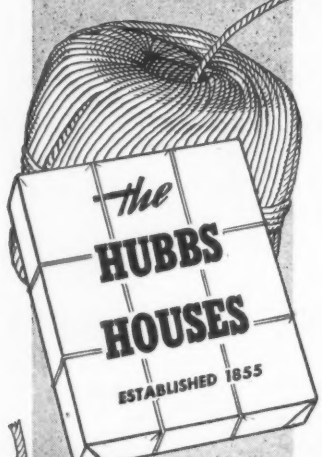

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claimed, is such that the aluminum foil is affected and not the ferrous metal part. This usage is now specified by the Medical Department for most instrument packages.

Further tests in this field are now under way at the Forest Products Laboratory and in other Government agencies. Tests are being made on such products as bearings and other critical replacement parts. Practically all of this kind of packaging is now done by hand and foil's close conformity to the part simplifies this operation. For large-scale operations, machine methods may eventually be developed and warrant close study.

Foil for butter wrappers

The butter industry is studying a method of wrapping print butter in vinyl coated aluminum foil. Exhaustive tests have been made for the effect of the foil on the taste, color and odor of the butter. The success of these tests indicates that a sizable quantity of butter may be so packaged in the very near future. Trademarked identifications will be maintained either by printing or embossing the foil.

There are also experiments under way in the use of foil for frozen food packaging. The conductivity of foil and its moisture-vaporproof qualities are such that it has great possibilities in this field.

There is no end to the possibilities and because of the promised abundance of aluminum due to increased production facilities, much can be expected in the way of aluminum promotion in the packaging field.

Acknowledgment

Material for this article was supplied through the courtesy of Reynolds Metals Co. Packages mentioned have been produced on equipment made by the following companies: Hayssen Mfg. Co.; Ivers-Lee Co.; Lynch Mfg. Corp.; Pneumatic Scale Corp.; Packaging Machinery Co.; Scandia Mfg. Co.; Simplex Wrapping Machine Co.; Stokes & Smith Co.; U. S. Automatic Box Machinery Co., Inc.

Packaged produce . . .

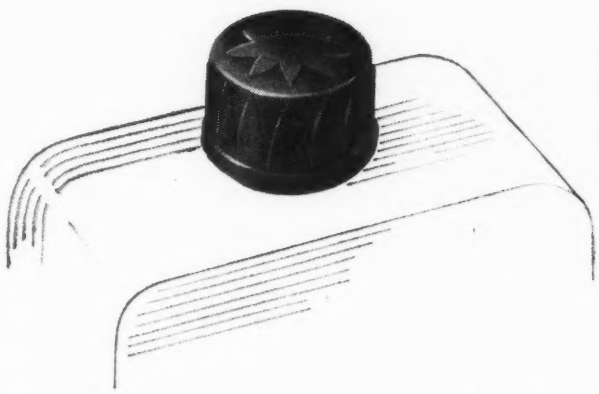
(*Continued from page 95*) store. A & P feels that the best way to avoid this will be to preserve a refrigerated atmosphere all the way from the grower's fields to the store. Packaging should be done in a cooled atmosphere; items should be pre-cooled and, after packaging, should be delivered to stores in refrigerated trucks.

Small quantities of cellulose acetate film have been used experimentally. The manufacturer claims for this material that it has a better moisture-vapor permeability (hence, less trouble with condensation), doesn't soften and doesn't expand and contract with temperature changes. Plain cellulose acetate won't heat-seal, but can be sealed with a solvent or a bodied adhesive.

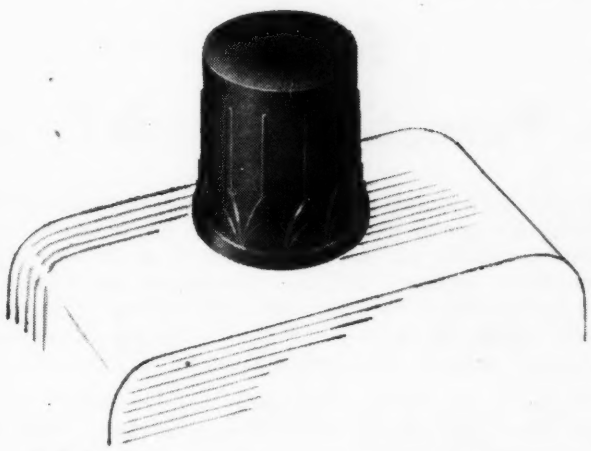
One interesting A & P experiment with cellulose acetate film involved over-wrapping of strawberries, a product which is particularly subject to mold in a damp atmosphere. In this experiment the wrapping and solvent-sealing of strawberry boxes was done on the premises of the grower in Tennessee and the pre-packaged strawberries were flown to Columbus for immediate sale. There was little or no condensation in the packages and performance was said to be very good.

Small quantities of lemons, tomatoes, green peppers, onions, turnips, green beans, leaf lettuce, endives and cauliflower also have been hand-wrapped with acetate and sealed with sol-

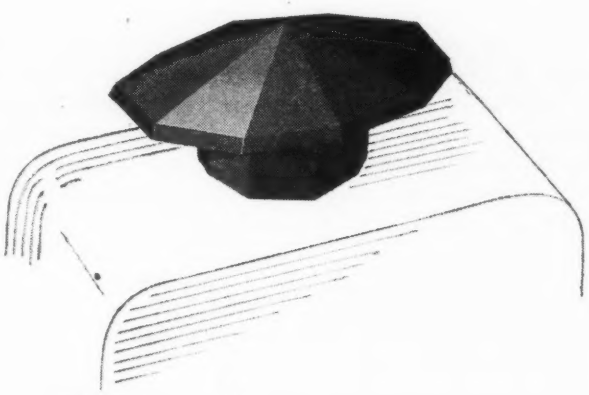
THREE "DO'S" AND A "DON'T" IN CHOOSING YOUR PRIVATE MOLD CAP



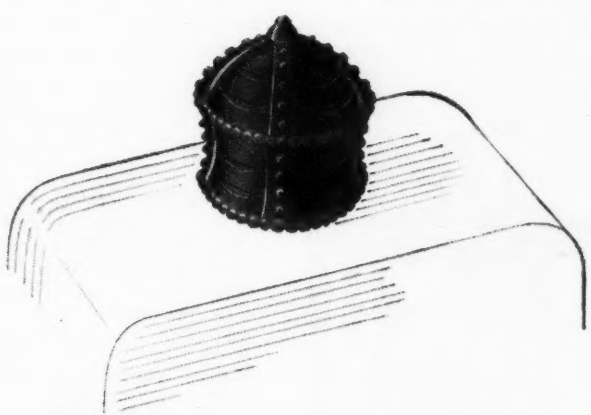
DO choose a simple, modern Armstrong's Artmold Cap like this private mold for low-cost distinction.



DO choose a slim, graceful Artmold Cap like this private mold to make your package look taller, distinctive.



DO take advantage of limitless design possibilities of Artmold Caps to give your package eye-catching individuality and extra style when catering to luxury trade.



DON'T go in for impractical, expensive features like this undercut design with beaded parting line. Get efficient, economical designs from Armstrong.

ARMSTRONG'S *Artmold* PLASTIC **CAPS**

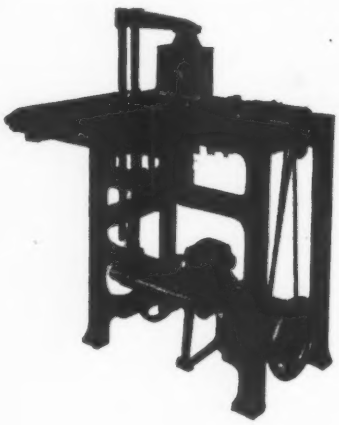
GIVE YOUR PACKAGE the style and individuality it will need to compete in post-war markets with Armstrong's Artmold Caps. For free design suggestions, send sample or drawing of your package to Armstrong Cork Company, Glass and Closure Division, 5907 Prince Street, Lancaster, Pennsylvania.

Can Your Wartime Methods Satisfy Peacetime Needs?

Today the big problem in most plants is to meet all demands made by the armed forces. No excuses go, because lives depend on ability to "deliver the goods" at a given time. Often these demands call for extravagant use of hand labor in operations better suited for machines. Thus, frequently setting up cartons and closing them by hand are necessary to meet a war schedule, even tho expensive.

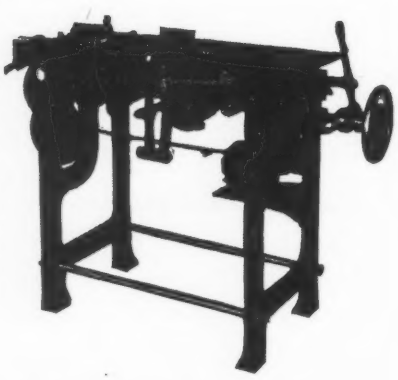
We hope it will not be long until civilian production is again "the order of the day." The chief considerations will then be high production, using the most economical methods and minimum labor cost. You can get such performance in your cartoning department only by using labor-saving, economical carton set-up and closing machines.

The PETERS organization has had wide experience in providing such machines for a variety of products. Why not let us suggest ways and means of lowering your cartoning costs and increasing your overall profit? Just send a sample of each size carton you expect to use, and recommendations will be sent to you promptly.



This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 35–40 cartons per minute, requiring only one operator. After the cartons are set up, they drop onto a conveyor where they are carried to be filled. If you desire to handle several sizes of cartons, machine can be made adjustable.

This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 35–40 cartons per minute requiring no operator. After cartons are filled, they enter machine on conveyor and are automatically closed. Can also be made adjustable to handle several different size cartons.



PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
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vent, but A & P officials state that these experiments have not been extensive enough to give a fair comparison. Some West Coast packers have used acetate bags for leafy green vegetables, sold non-refrigerated, with good results.

Ambitious as it is, the A & P Columbus experiment has not yet reached its full scope. Officials want to make a serious effort to move the packaging operation clear back to the grower. This would be logical; it would eliminate waste material such as carrot tops right at the source and obviate unnecessary freight, and would also extend the period of protection which the package affords. But it is realized that this is a long-term project with many headaches. Small growers will object to the expense of a proper packaging installation, although it is possible that packaging plants may be set up as community centers in growing districts.

There will also be the problem of getting growers to package uniformly, so as not to imperil consumer acceptance of a sealed package. In the A & P view, this is all part of a long-range program to improve and unify the quality of produce—a program which goes clear back to the seed.

An important part of Dr. Hauck's Ohio State University program is to work with a few independent Ohio growers in special plantings and harvestings this year. Careful supervision will permit comparisons of quality, harvesting, packing, containers, loading, delivery and handling in warehouse and retail stores. Such experiments will determine what premium, if any, the grower should have for his special efforts.

Arrangements will be made with one or more Ohio growers to pre-package experimental lots at the farm. These will be shipped in refrigerated trucks directly to the Columbus stores. Careful records will be kept of any savings or advantages which accrue. When labor and supply conditions permit, it is planned to make similar tests with experimental lots prepackaged at more distant growing points, such as the Southwest and Pacific states.

The A & P has long been interested in air shipment of fresh produce, having underwritten, together with United Air Lines, a research project to this end at Wayne University, Detroit.

It takes no great imagination to envision the day when all fresh fruits and vegetables will be fully ripened before harvesting, scientifically packaged in transparent consumer units on the spot and shipped in refrigerated cargo planes or air-conditioned freight cars and trucks. In this is the ultimate promise that food waste will be virtually eliminated, prices reduced and quality and taste immeasurably improved.

CREDITS: *Cellophane by E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; cellulose acetate by Celanese Plastics Corp., New York; paperboard by Ohio Boxboard Co., Wadsworth, O.; bags by Union Bag & Paper Corp., New York; machine and labels by Oliver Machinery Co., Grand Rapids, Mich.; display cases by Hussmann Refrigeration, Inc., St. Louis, Mo.*

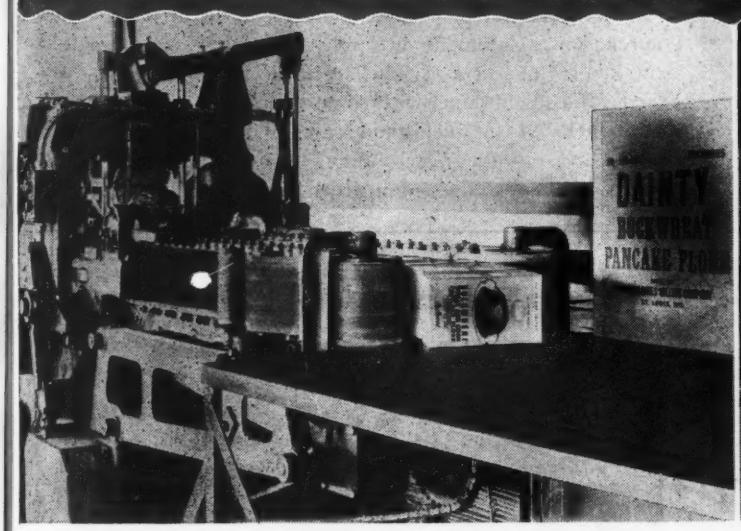
New informative label . . .

(*Continued from page 111*) at this time, membership of the Educational Service is emphatically opposed to mandatory grade labeling, though if such legislation were enacted member canners might not be unfavorably affected. The certified "U. S." would still be permissible only to those who could qualify for the U. S. Continuous Inspection Service.

Requests for acceptance are approved by the Standardization and Inspection Division of the USDA for processed fruits and vegetables on the basis of plant facilities, operation and management, and sanitation. Acceptances for the Government Service are now also dependent on the availability of

Protection

for the Product, from insects . . . .



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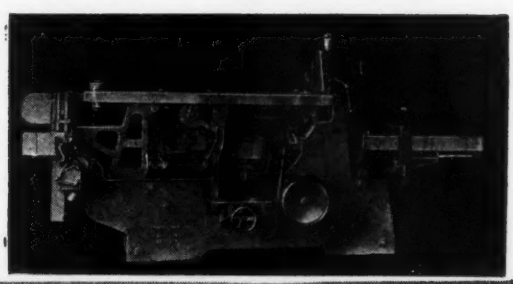
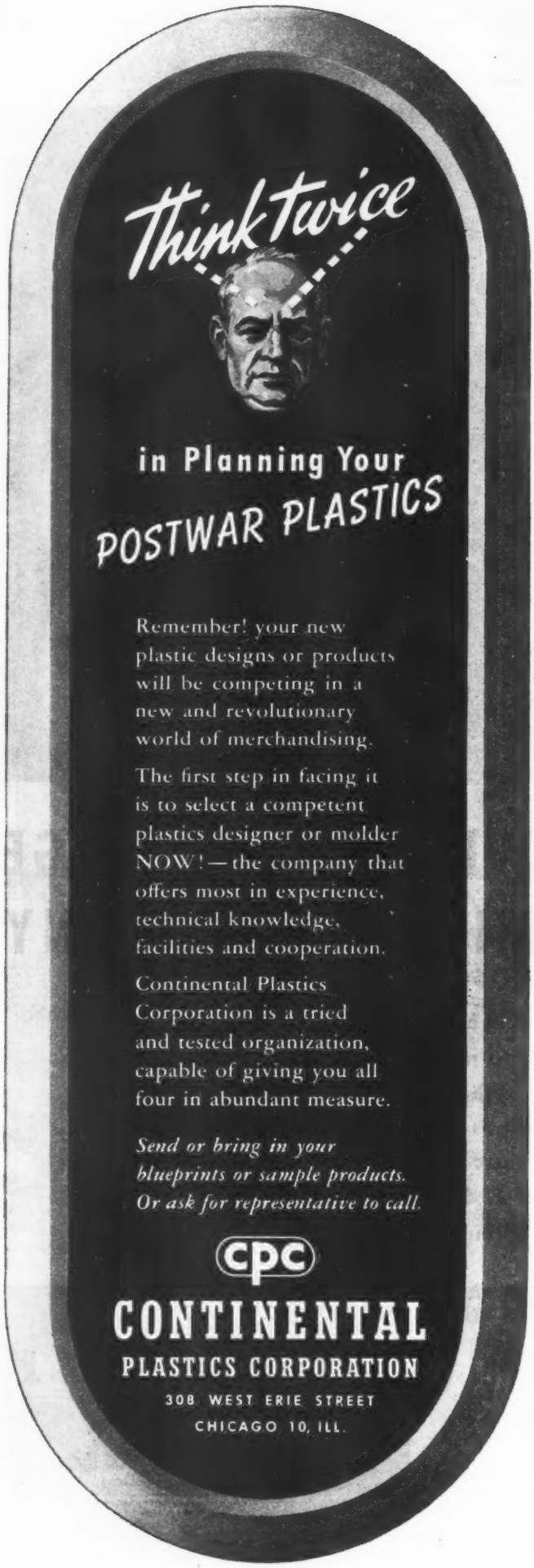


BETTER MACHINES FOR BETTER PACKAGES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trained Federal inspectors, some of whom are returning from the armed forces. When approved by the USDA, the inspected canners are eligible for membership in the U. S. Inspected Foods Educational Service—a non-profit agency. On affiliation they may be licensed to use the shield panel.

After three years' experience with voluntary U. S. Grade Labeling, the Educational Service believes, according to Miss Gade, that the consumer finds a certified grade and description of qualities and quantities most helpful in buying canned foods and that additional information about uses, preparation and care is desirable. The answer may be found in the results of the study now in progress, in which 3,000 consumers have been sent representative samples of the various types of labels in use by canner members, including a sample of the x-ray and two of the shielded panels and asked to return the one which the consumer considers most helpful in point-of-sale purchasing. Comments are welcomed on the reverse side of the label. The first 17 labels returned showed that 10 preferred the shield panel with some variations, and four the x-ray panel. Of the shield preferences, 9 out of the 10 voted for alphabetical grade over Fancy, Choice, Standard. Other returns will not be opened until fall, when all will be tabulated.

New frozen food "can"

Die seamer applying metal end to fibre-bodied package.

A new and different type of package for frozen foods which can be closed at speeds up to 200 per min. is under test by the American Can Co. The company has just completed a pilot line on which a limited number of samples will be built this year for tests. These containers will be distributed to packers of frozen foods to demonstrate in actual practice the results which have been obtained in laboratory tests.

The container is an oblong composite fibre-metal can resembling the conventional frozen food carton in shape. The semi-rigid walls, however, are paraffin-impregnated fibreboard and the ends are lightweight tinplate. The new package can be opened either by prying off the end with an ordinary hook-type opener, or by cutting around one corner close to the end with a kitchen knife and peeling off the end by hand.

The company claims several advantages for this new container, some of which are that in itself it provides a complete package requiring no inner-sealed bag or outer wrap, and that it eliminates setting-up. The package can be printed at the point of manufacture and is said to be adaptable for use in all present types of freezing equipment. It is said to be extremely resistant to the transfer of moisture-vapor and to water leakage.

Sal Hepatica takes a prescription!

SAL HEPATICA had a slight case of package-trouble.

The package: a small glass vial which held a "physician's sample" of the product.

The trouble: this glass vial had a bad habit of cracking up in packing or shipment.

So we had a look at the trouble ... and promptly prescribed our Unitainer, the convenient, compact, one-dose collapsible tube. And Sal Hepatica *took* the prescription.

Good medicine? Must have been, because every symptom of package-trouble disappeared. No more samples crushed or broken in transit. Instead, every sample reached some doctor's office in perfect condition. Because neither air nor moisture nor germs can get inside a Unitainer, not until the very moment of use.

But your product is different?

Of course it is. Yet perhaps your packaging problem isn't so "different" as you might think. Almost any packaging problem gets a lot closer to solution when it gets this kind of design ingenuity and resourcefulness.

You already know that the collapsible tube has unique, inherent advantages: it's virtually unbreakable, compact, germ-proof, light-proof. Contents won't dry out in use.

But this may be news to you: recent developments have made Sun Tubes ideal containers for products never before thought suitable for tube packaging!

Can these developments help solve your packaging problem? Just ask the Sun Tube representative nearest you. A phone call or postcard will bring him to your office.

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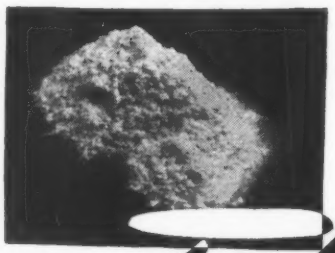

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Tool for sealing

(*Continued from page 121*) estimated that when built with specially designed speed-reducing mechanism, which will be more efficient and permit a more compact case, the weight will be cut to 6 or 7 lbs., and the motor will be amply large.

A tape that works well with this tool is about $2^1/_2$ in. wide, made of two sheets of 40-lb. kraft, laminated and creped with 75 lbs. of asphalt and coated with a pressure-sensitive mix running about 125 lbs. per sq. ft. A heavy coating is necessary to fill all crevices and to weld into the surface of the liner.

This coating, which is a blend of asphalt materials, was found to work satisfactorily and had better resistance to softening at high temperatures and to becoming brittle at low temperatures than any of the asphalts used in the laminations of the case liners themselves. Tape coatings were developed also from tough, high-melting formulas containing hard asphalts such as Gilsonite in combination with rubber-like materials such as Vistanex. These coatings have better resistance to softening at high temperatures or becoming brittle at 20 deg. below zero F. or lower, but the material does not flow readily. Such coatings must be sealed by applying heat to the rollers and slowing speed of travel.

This form of sealing tool, being portable, should be especially adapted for sealing large-sized packages or packages of varying size and shape not handled on an assembly line. With a long cable, it can be moved where needed.

If an extended neck is provided on the liner pouch, the package may be opened temporarily by cutting off the tape and again closed by applying a new piece over the cut edge.

Insects . . .

(*Continued from page 141*) package is undoubtedly a very important factor. Metals and glass owe their resistance to this quality and in tests with various papers those having the hardest finish usually were the greatest resistant.

The finished package must also have a smooth surface, with a minimum of folds, creases, seams, rough edges and similar places where an insect can obtain leverage and a purchase for its mandibles. This smooth surface can be obtained by the use of smooth, hard, packaging materials; by closer attention to cutting and assembling of the package to provide tighter seams; by special design to eliminate as many seams, flaps, creases and folds as possible, or by a carefully applied bubble-free coating of some material such as thermoplastic wax to eliminate rough spots, creases, etc.

The package, in addition, must be so designed and so constructed as to be insect-tight and must have a reasonable expectation of remaining so. Even the most minute holes or cracks may render a package valueless as the immature stages of insects can pass through tiny invisible holes.

Another quality in a package which adds to insect resistance is thick walls. This has been repeatedly demonstrated in our tests. The granary weevil adults, for example, can penetrate nearly all the thin materials tested but none of the heavy ones. Thus thick-walled packages will probably prevent the entrance of all the insects such as flour beetles and moths which do not have strongly developed boring habits.

In some instances it may be possible to increase resistance by incorporating an abrasive in some layer. Some materials of this type have shown particular promise. Another approach is the incorporation of toxic or repellent chemicals either in the packaging material or in a coating.

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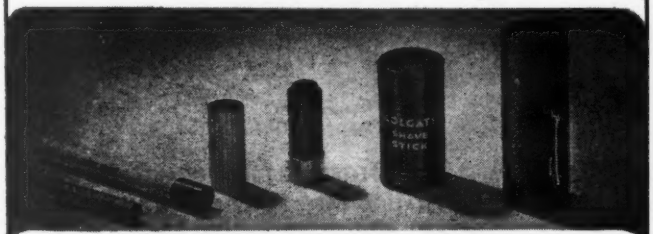

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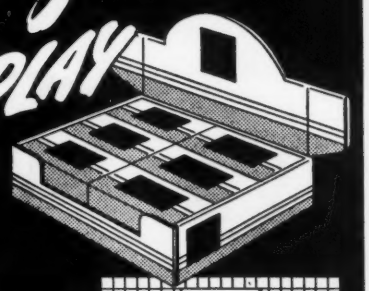

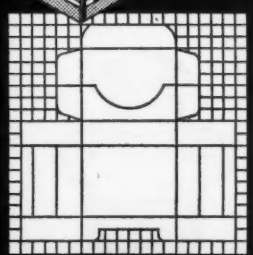

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DISPLAY CONTAINERS

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Telephone MUrray Hill 4-7520

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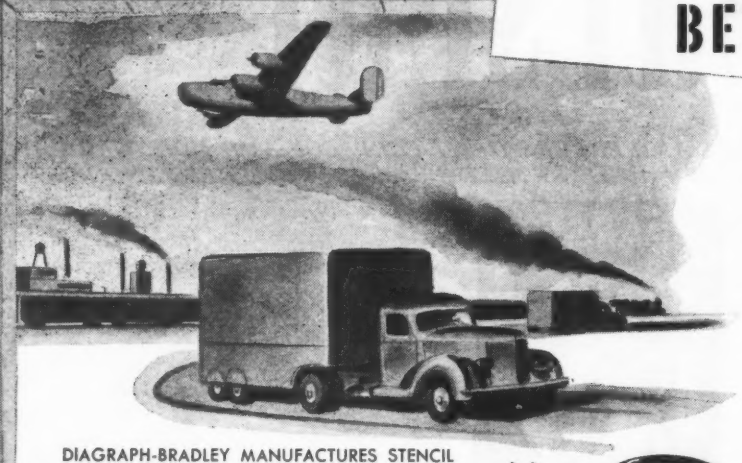

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CLEAR . . . EASILY READ . . . PERMANENT STENCIL ADDRESSED SHIPMENTS will help to speed and insure their delivery on time.

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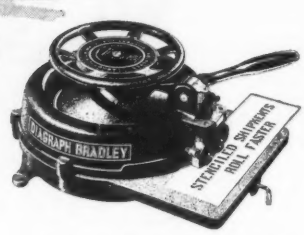

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SPECIALISTS
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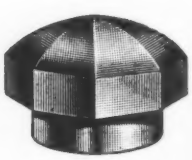
CAN & BOTTLE CLOSURES



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NEVER LET GO
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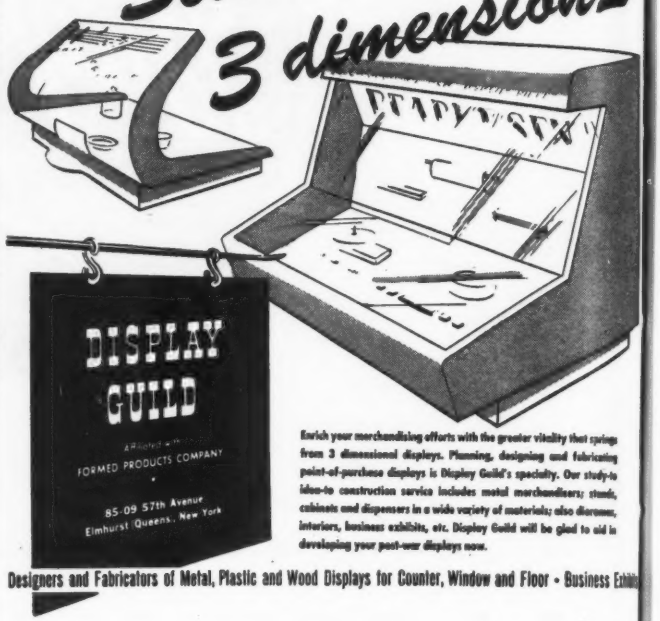

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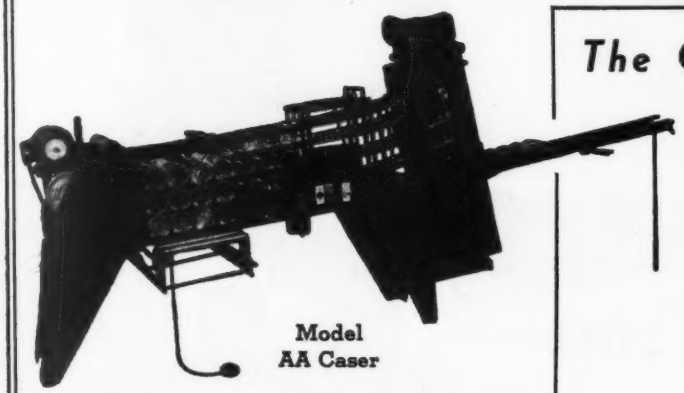
If You Have a Casing Problem For Cylindrical Cans



Model
AA Caser

If your product is packed in cylindrical cans, you can materially speed up casing or boxing operations by the installation of a CRCO-New Way Caser which will insert cans in the cartons. Several models are available to cover all capacity needs from those of the small manufacturer to those of the producer who must pack huge quantities of containers daily.

No matter what your casing problem, if it concerns a cylindrical tin or metal container, CRCO New Way Engineers will be glad to discuss it with you.

The Chisholm-Ryder-New Way Model AA Caser

- High speed packing with capacities ranging up to 22 3 x 4 cases per minute (No. 2 container).
- Can be equipped with right, left or two-side discharge.
- Can be direct coupled to closing machine, labeler or can feed table.
- Positive micro-switch feed control of Model AA avoids delays.
- Power-driven throughout, equipped with vari-speed control.
- Completely New Way built—not an assembled machine.
- Available for all types of standard, squat or tall cylindrical cans in one size from $2\frac{3}{16}$" to $6\frac{3}{16}$" diameter in one height up to 9".
- Strong and sturdy yet compact enough for narrow warehouse aisles.

Chisholm-Ryder Co. NEW WAY DIVISION HANOVER, PA.

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Rotary Hot Krimp

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- √ SEALS BAGS POUCHES OR PACKAGES OF ANY SIZE OR WEIGHT
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- √ SEALS 240 LINEAL INCHES PER MINUTE

Standard Model.....$199.50
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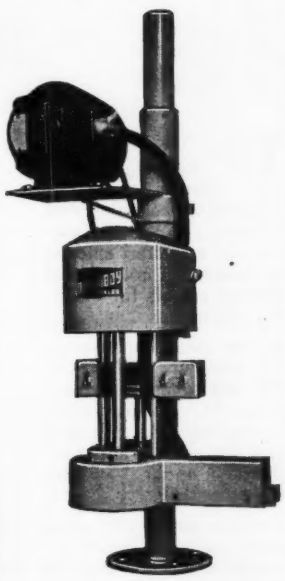
Good Delivery on High Priority



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WHEN A *Capem*

GOES ON THE BOTTLING LINE

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CAPEM is an automatic, high speed capper. It is available in 1, 3 and 4 spindle models and is easily fitted into any bottling line. Speeds range from 2000 to 7500 containers per hour. Write for information on this sure way to increase production with less help.

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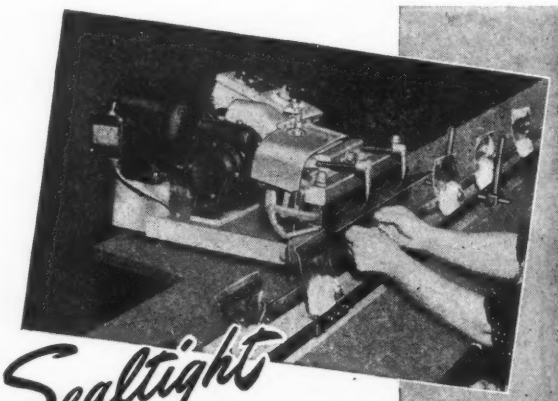

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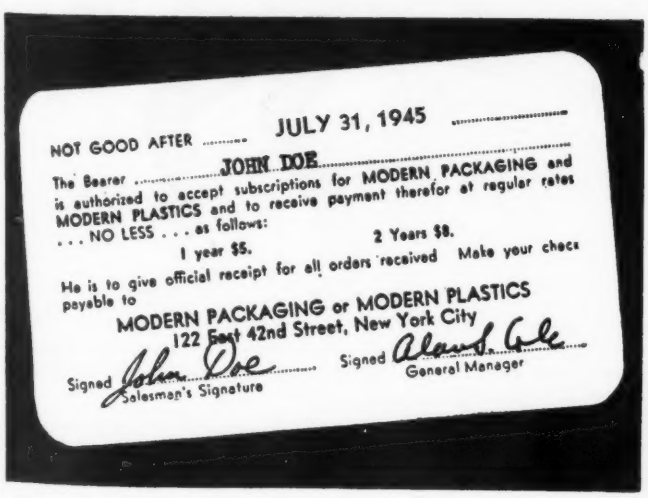
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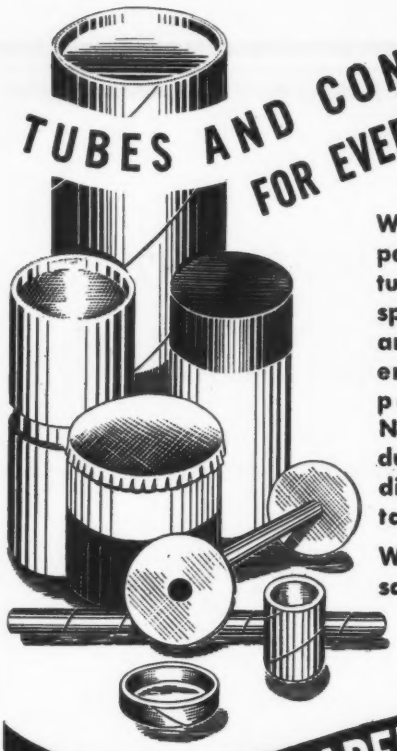

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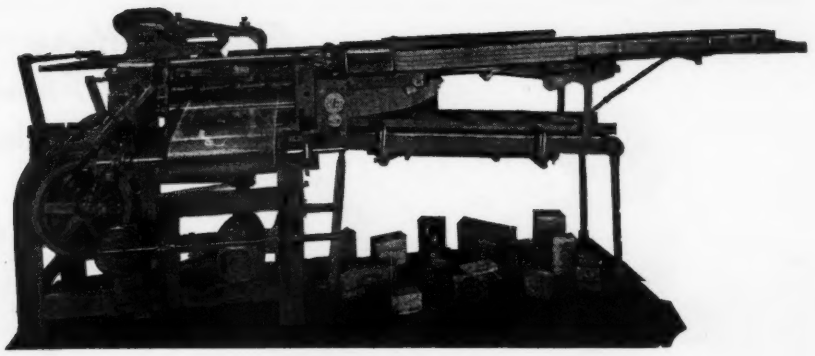

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WHILE THE WAR LASTS

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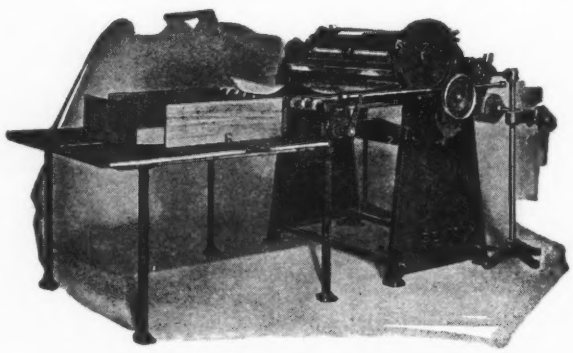
...s are also many business men—ARE YOU?



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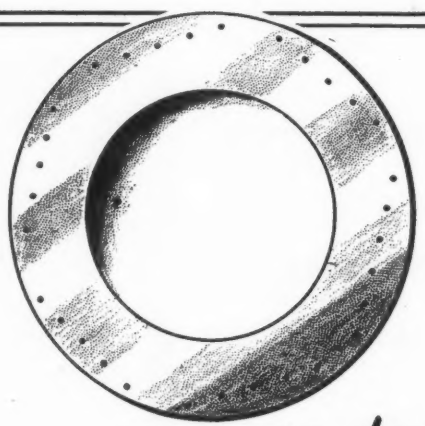

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This revolving drum doesn't take a beating—it gives one! Containers given a ride in it undergo the kind of treatment they get in transit. This is just one of the scientific tests we use to determine the strength of containers and the efficiency of packing methods. Perhaps we can help you with your shipping problems.

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1945 PACKAGING CATALOG

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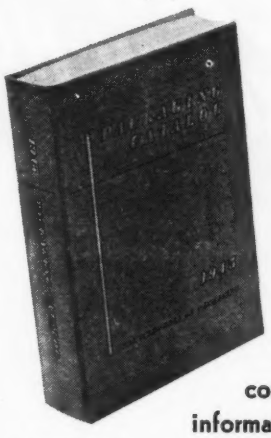

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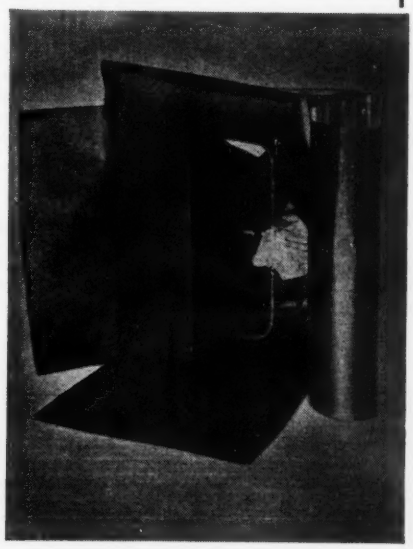

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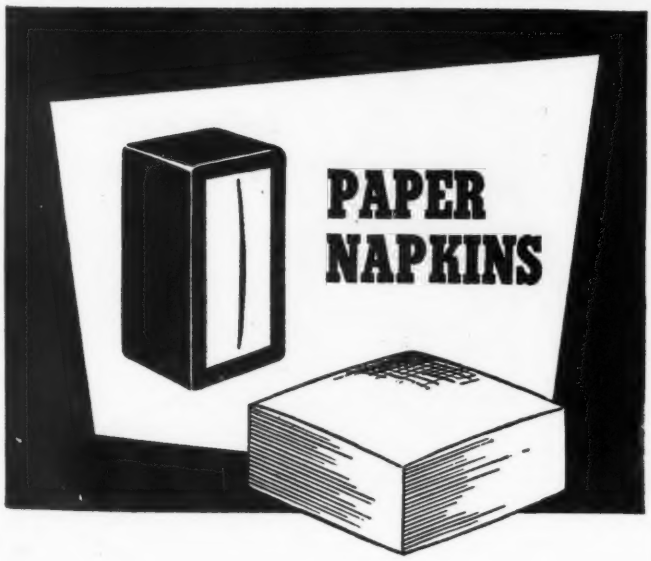

ANY fold desired. Plain, embossed or printed—our machines will make them. • High speed. An excellent product. Lowest production costs. • Start your post-war production program with the best equipment. Plan for this production now. • We will send complete information — ask us.

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MACHINE CO • GREEN BAY • WIS

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GUMMING • STRAIGHT CUTTING • EMBOSSING
PERFORATING

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This Box is made with Semi-Rigid Transparent Acetate Sheeting and Paper and can be made by anyone making Paper Boxes. It can be used to advantage to hold Shoes, Hats, Blankets, Sportswear and other lines usually stored in a closet. It also makes an excellent display box as the product can be seen from all sides. It would make a good job of bringing an old product back to the market or introducing a new one. Postwar competition may be tough on ordinary boxes, so why not have one of your own onwhich you can make a good profit? Box 314, Modern Packaging.

SALES MANAGER for Paper Carton Specialties. Thoroughly experienced in sales promotion and specialty development. Complete outline of personal record requested. Empire Box Corporation, Palmolive Bldg., Chicago, Ill.

DUPLEX BAG MACHINE FOR SALE—Machine for manufacture of duplex bags available for immediate delivery, glued paper outside, cellophane or other heat sealing material. Size ranges as follows: 5″ to 19″ length, 2″ to 9″ width. Owner discontinued manufacture of duplex bags. Reply Box 308, Modern Packaging.

WANTED—Man who knows plastics fabrication to handle sample making and development laboratory of newly created plastics container department of a long established paperboard container company located in Brooklyn. The right man will advance with the department. Write fully stating age, experience, and salary requirements. Box 315, Modern Packaging.

WANTED: Experienced Artist and Designer for packaging material. This is a postwar position with a future. Write Box 1395, Greensboro, N. C.

MANUFACTURERS REPRESENTATIVE having intimate contact with the Drug and Cosmetic manufacturing industry in Chicago and midwest seeks new packaging item or line. Excellent knowledge plastics and metals. Reply Box 316, Modern Packaging.

WANTED: Package Machinery Company CA-2 machines. Write full particulars as to age, condition, serial number, etc. Address Box 296, Modern Packaging.

LEADING BELGIAN manufacturer of folding cartons wants information on and propositions for new processes, machinery, materials, patents. Write Industrial Research Laboratory, 421 Memphis St., Philadelphia 25, Pa.

CHEMIST for laminating and coating plant in Cleveland district. Must have general knowledge of adhesives, resins and Thermo-plastic in particular. Splendid postwar possibilities. Give age, experience, availability and salary expected in first letter. Box 310, Modern Packaging.

WANTED: Cellophane bag making machine, Simplex or Modern Clipper. Box 317, Modern Packaging.

WANTED: Art Director: Must prove executive ability and exceptional creative talent, expanding organization, experience necessary in retail package design, must be well versed in printing. Fully outline qualifications and name salary. Man or woman. Box 318, Modern Packaging.

FOR SALE—Knowlton 20″ Convolute Paper Tube Winder Labelling attachment Langston 45″ Kidder 45″ Knowlton 69″ Paperboard Slitters and Rewinders, Langston Spiral Winders, Glue Pots, etc. Theo. Adams, 111 W. Washington St., Chicago 2, Ill.

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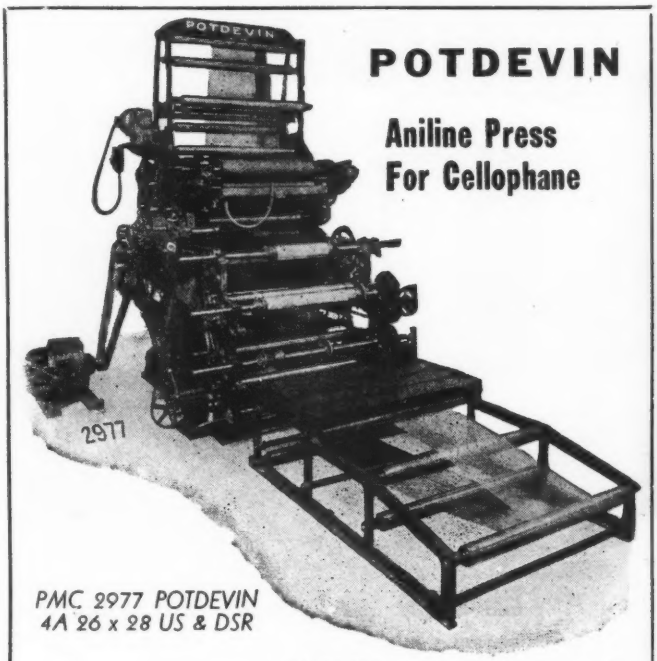
WANTED: Obsolete sizes Foil Bags meeting government packaging specifications. Box 319, Modern Packaging.

WANTED: Top and bottom carton sealing equipment. Bottom sealer with automatic feeder or Stokes, Never stop preferred. Advise carton size machines were built for, condition, age and make. Box 320, Modern Packaging.

As its contribution to orderly re-employment, MODERN PACKAGING will print free of charge in its "Positions Wanted" classification, one ad, not to exceed 20 words, for each honorably discharged veteran of the armed forces of the United Nations who has had previous packaging experience.



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4A 26 x 28 US & DSR

(Model 304)

4-Color Multi-length pigmented Aniline Ink Web Printing Press with Unwind, Slitters and Dual Shaft Rewind. Especially suitable for cellophane.

Note: Continuous drive for ink fountain rollers;—long, variable drying runs between first and second colors, also after last color before rewinding.

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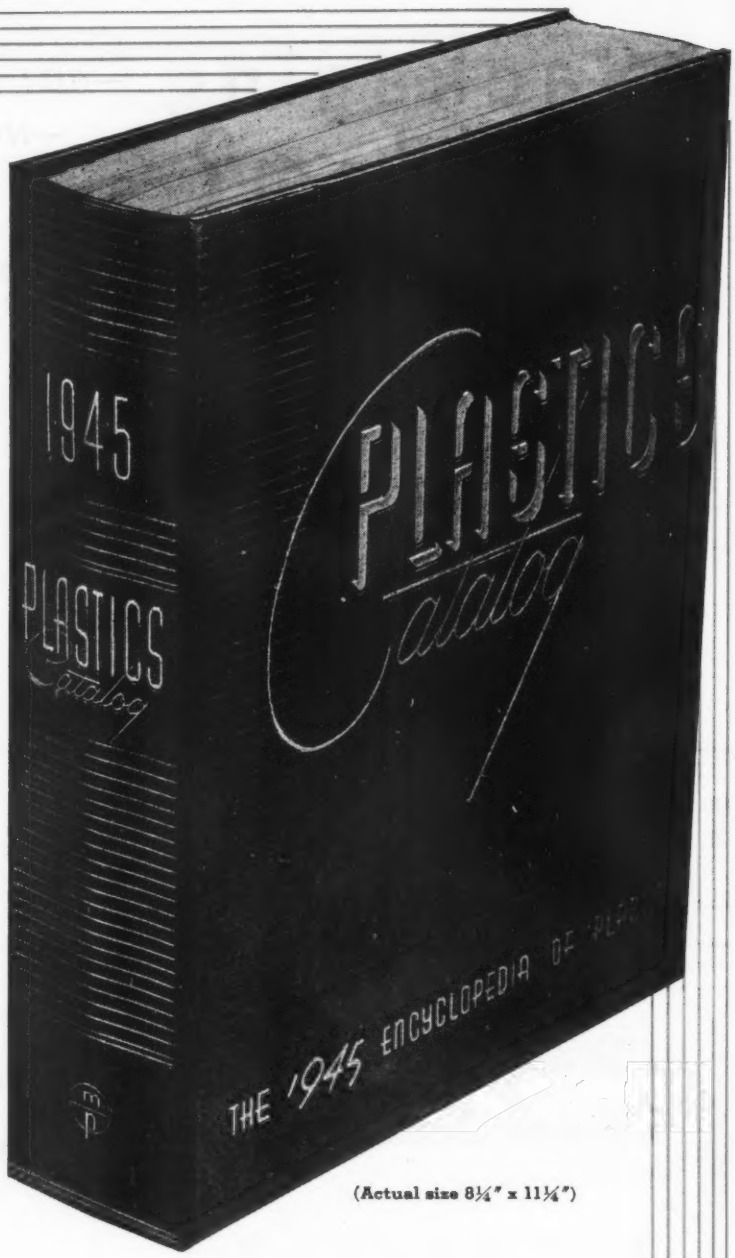
Encyclopedia of Plastics



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1172 pages • case-bound • 9 exclusive charts
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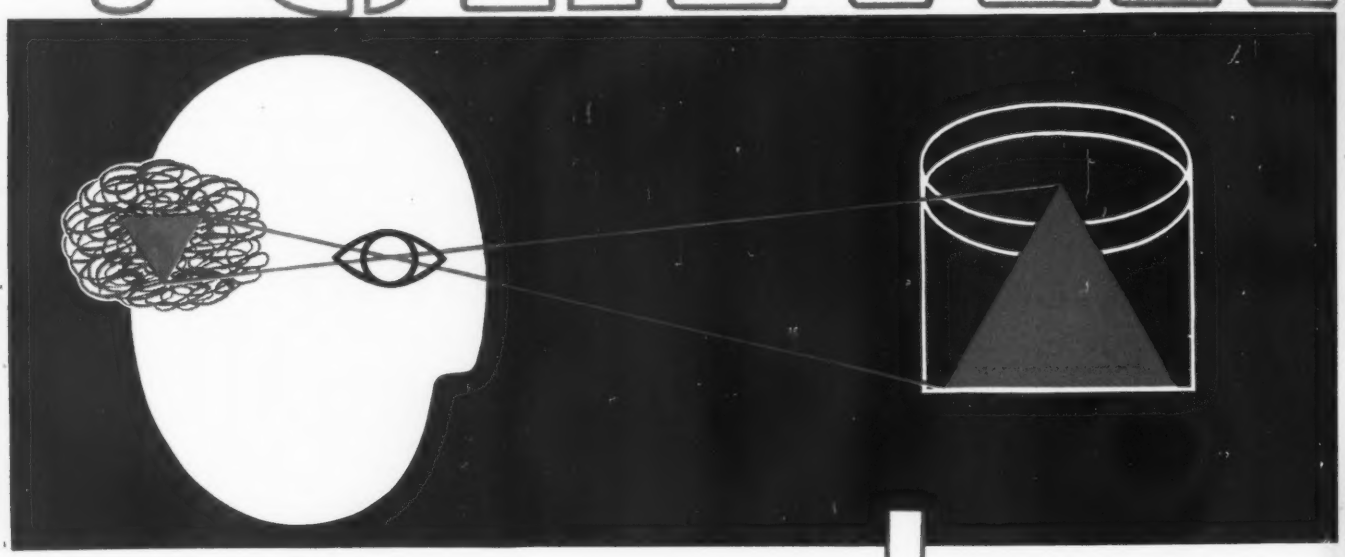
MODERN PACKAGING
BRESKIN PUBLISHING COMPANY
122 East 42nd St. New York 17, N. Y.

Let others take the "SLOW" road
you take the "EYE-ROAD" . . . with

VUEPAK



Eighty-five per cent of all impressions come to the brain through *the eye*.

That's why your product will enjoy a running start in the post-war market sweepstakes *if* you give it the advantage of a quality showcase of Vuepak. In rigid, clear, economical Vuepak your product will sell faster because it gets maximum display of all its principal appeals . . . its color, its beauty, its freshness, its cleanliness.

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Isn't it time *you* looked into Vuepak?

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1. What is Vuepak?
Vuepak is a transparent, tough, rigid, beautiful Monsanto cellulose acetate.

2. In what form is Vuepak available?
In sheets up to 30″ wide, and in continuous rolls 30″ wide up to 1000 ft. long, depending upon thickness.

3. In what thicknesses is it ordinarily available?
In six standard gauges 0.005″ to 0.020″.

4. Does sunlight affect it?
No.

5. Is it affected by heat?
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6. How can it be fabricated?
It can be drawn, shaped, formed or folded into almost any shape with inexpensive dies. It can be embossed, stapled, printed, cemented, or combined with other materials.

7. Is Vuepak available now?
No, not until its war job is completed.

Meanwhile if there are more questions, or more information on Vuepak that you would like, inquire of our specialists in packaging. Write, wire or phone: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Mass.

The broad and versatile family of Monsanto Plastics includes: Lustron polystyrenes • Cerex heat resistant thermoplastics • Vinyl acetals • Nitron cellulose nitrates • Fibestos cellulose acetates • Thalid for impression molding • Resinox phenolics • Resimene melamines • Forms in which they are supplied include: Sheets • Rods • Tubes • Molding Compounds • Industrial Resins • Coating Compounds Vuepak, rigid, transparent packaging materials.

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SERVING INDUSTRY...WHICH SERVES MANKIND

VUEPAK

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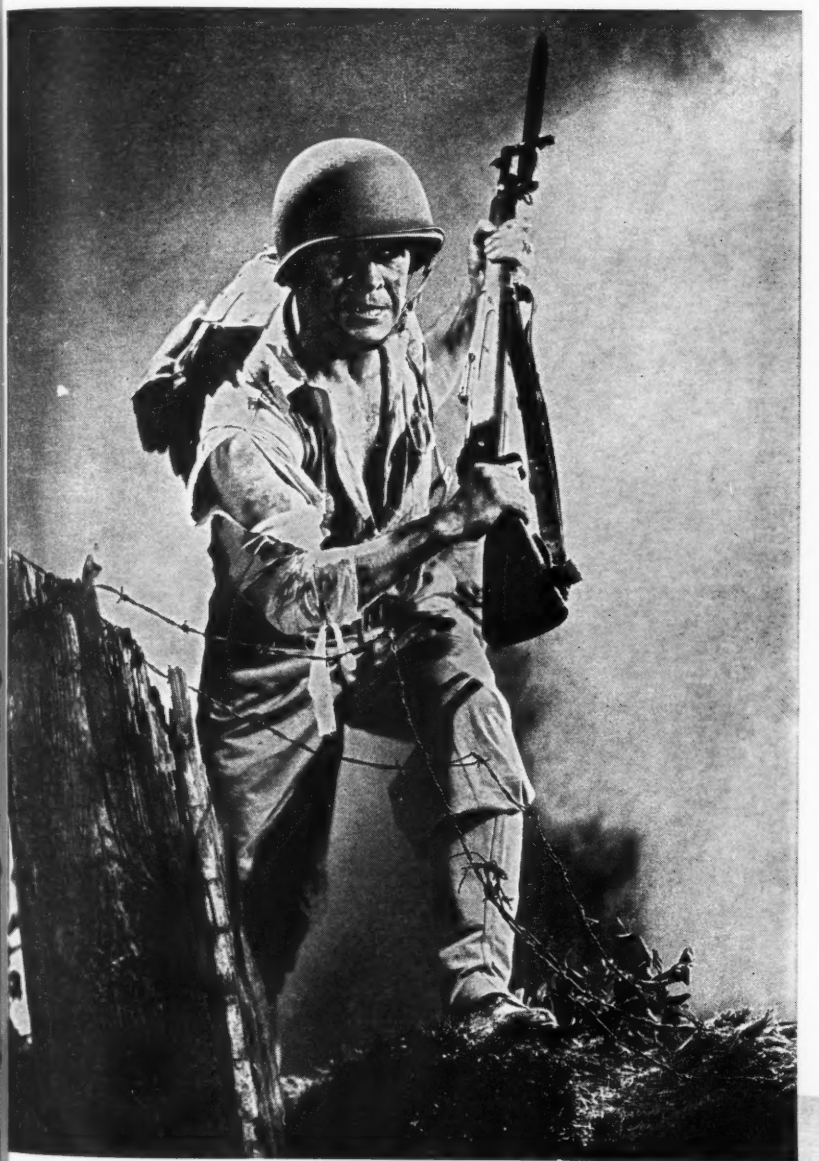


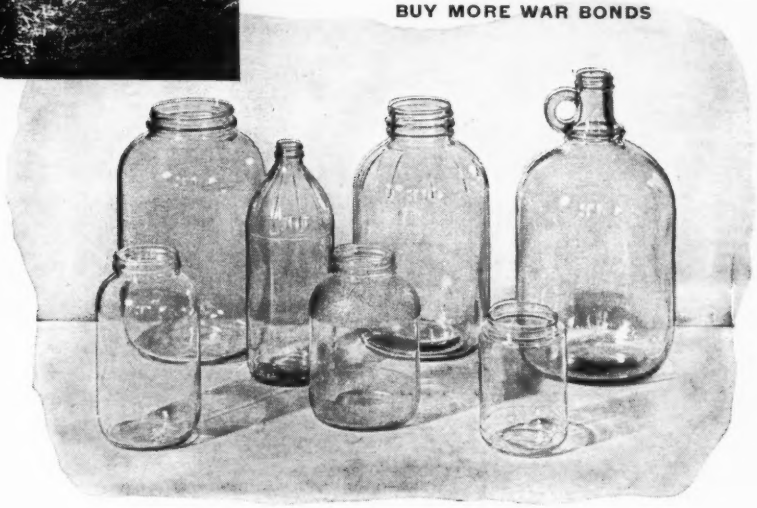
In all the nation's wars, in many ways, Americans have served.

This Independence Day, *Ball Brothers Company* honors its employes in the Armed Services of our Country and those who have backed our fighting men by serving well on the home front, producing glass containers for packaging vitally needed products.

After Victory, *Ball Brothers Company* and its employes will continue to serve well—providing the best in modern packaging.

"THE BEST!" In war and in peace! That is what is meant by "All American!"

BACK THE ATTACK
BUY MORE WAR BONDS



BALL
BROTHERS COMPANY
General Offices
MUNCIE, INDIANA, U.S.A.

Protection
IN PACKAGING

The prime function of every package is to protect the contents. The *degree* of protection is decided by engineering which also determines the proper material and maintains its quality level. For example, the dehydrated package which protects every type of product from water and moisture damage in storage and transit. Shellmar engineers cooperated in the development of this new type of wartime package . . . today they are ready to adapt it to your postwar products.

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